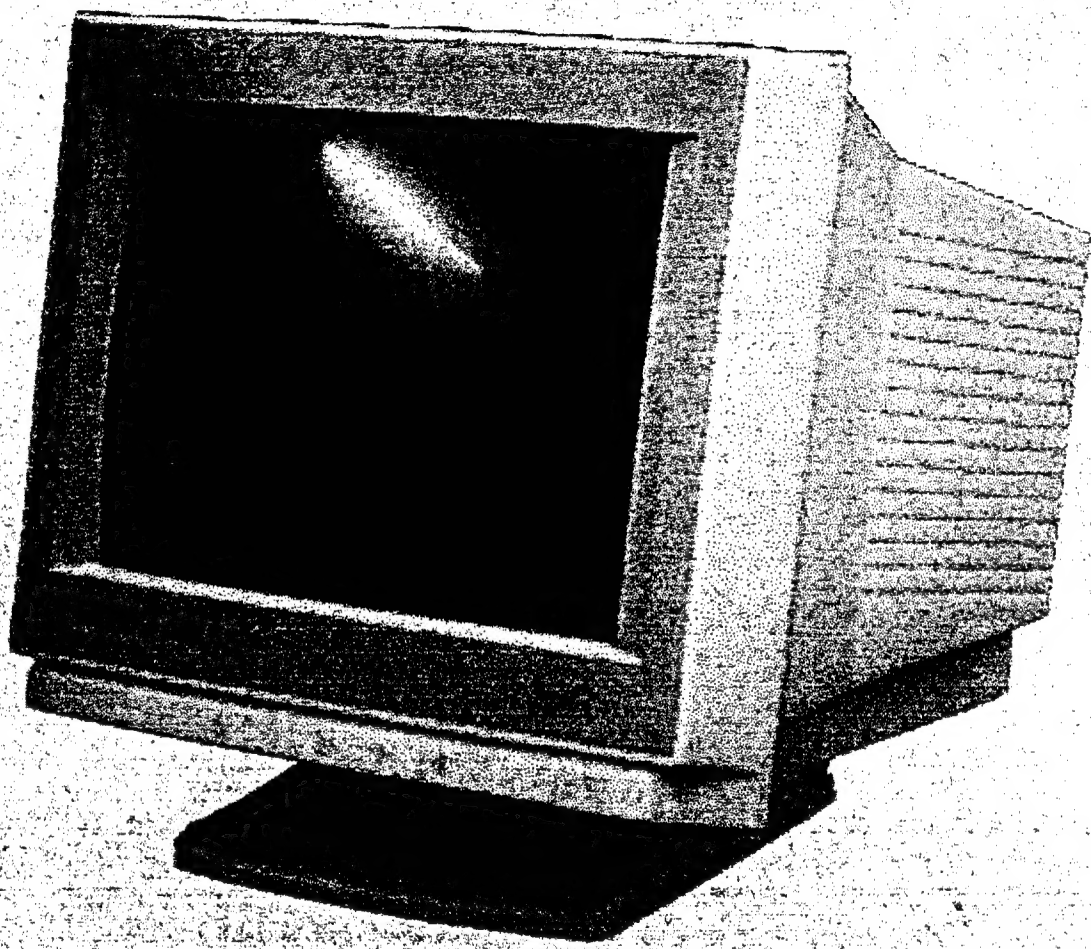
TAXAN



Service Manual

For the Ergovision 400 LR and Ergovision 410 LR
14" Power Saving Colour Monitors

Set Vertical size at 185mm on 640x480 / 60Hz mode by adjusting VR325.

C Vertical Linearity Adjustment (VR311)

Input Signal: 640x480/60Hz, crosshatch pattern

Adjust **VR311** for same height on the top and bottom blocks.

D Screen And White Balance Adjustment

Input Signal: Cross Hatch Pattern

Adjust **VR352** so that the pincushion distortion is minimum

Drive VRs: VR502, VR532, VR562
Bias VRs: VR910, VR940, VR970

Input Signal: Full White Pattern

1a Set Brightness & Contrast to maximum and G2 voltage to have luminance 1FL.
1b First, adjust VR940 to its center position
Second, adjust VR970 so that Y=0.311
Then, adjust VR910 so that X=0.281
1c Adjust G2 voltage to have luminance to 0.5FL

Input signal: 50mm x 50mm white block pattern

2a Set Brightness at center click position & Contrast to maximum
2b Adjust **VR532** for luminance to 53FL

3a Adjust contrast to 8FL
3b First adjust VR562 so that Y=0.311
Then adjust VR502 so that X=0.281

4a Repeat steps 2b to 3b until the best white balance is obtained

E Focus Adjustment

Input signal: Character "e" pattern

1 Set Brightness & Contrast for a normal display.

2 Adjust the focus control at the high voltage resistor block to obtain the best focus over the entire display area.

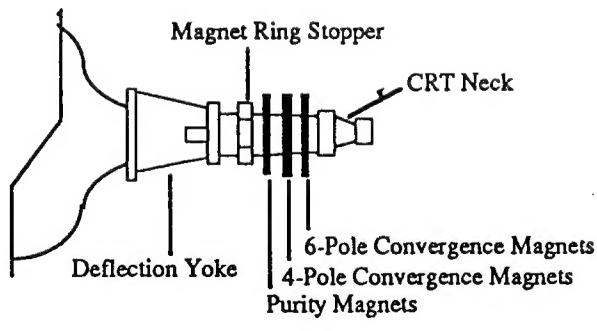
F Static Convergence Adjustment

Note	The monitor should be operated for at least 30 minutes before any convergence adjustments are made.

Input Signal: Cross Hatch Pattern

1 Set Brightness & Contrast so that a well-defined pattern is obtained.

2 Ensure that the convergence magnets on the CRT are in the correct position.



3 Turn the 2 tab of the 4-pole magnets independently to adjust their angles. Align the red & blue vertical lines at the center of the screen.

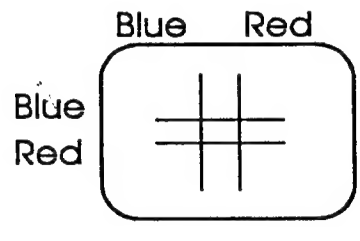
4 Turn the 2 tabs of the 4-pole magnets simultaneously to keep their angles constant. Align the red & blue horizontal lines at the center of the screen.

5 Turn the 2 tabs of the 6-pole magnets independently to superimpose the red or blue vertical line on the green one.

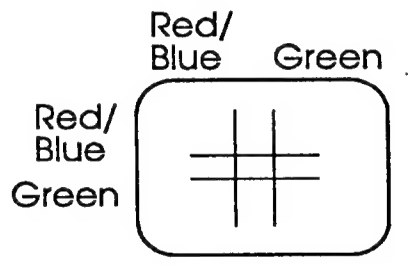
6 Turn the 2 tabs of the 6-pole magnets simultaneously to superimpose the red or blue horizontal line on the green one.

7 Repeat steps 3, 4, 5 & 6 until the best convergence is obtained.

Note	The 4-pole magnets & the 6-pole magnets interact, making dot movements complex.



4-pole magnets movement



6-pole magnets movement

G Degaussing

Degaussing is required when poor color purity appears on the screen. This monitor uses an automatic degaussing circuit that is activated at power on. Automatic degaussing will be fully functional within 15 minutes.

The degaussing effect is confined to the picture tube since the coils are mounted at the back of the tube. Should any part of the chassis or cabinet becoming magnetized, it will be necessary to degauss the affected area with a manual degaussing coil.

Manual Degaussing

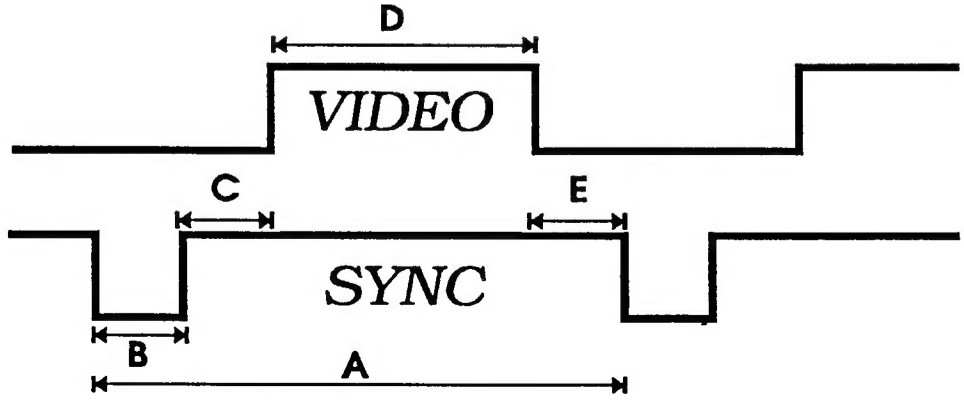
1 Apply line voltage to the degaussing coil and move it in a rotary motion over the front, sides , and top of the monitor. The coil should be kept away from the rear of the monitor to avoid damaging the magnetic neck components.

2 Slowly rotate and move the coil away from the monitor to about 6 feet beyond the point where no effect on the CRT will be noticeable.

For proper degaussing, it is essential that the field be gradually reduced by moving the coil slowly away from the monitor. The degaussing coil must never be shut off or disconnected while near the monitor, as this would introduce a strong field instead of canceling the effect of the stray fields.

TIMING CHART

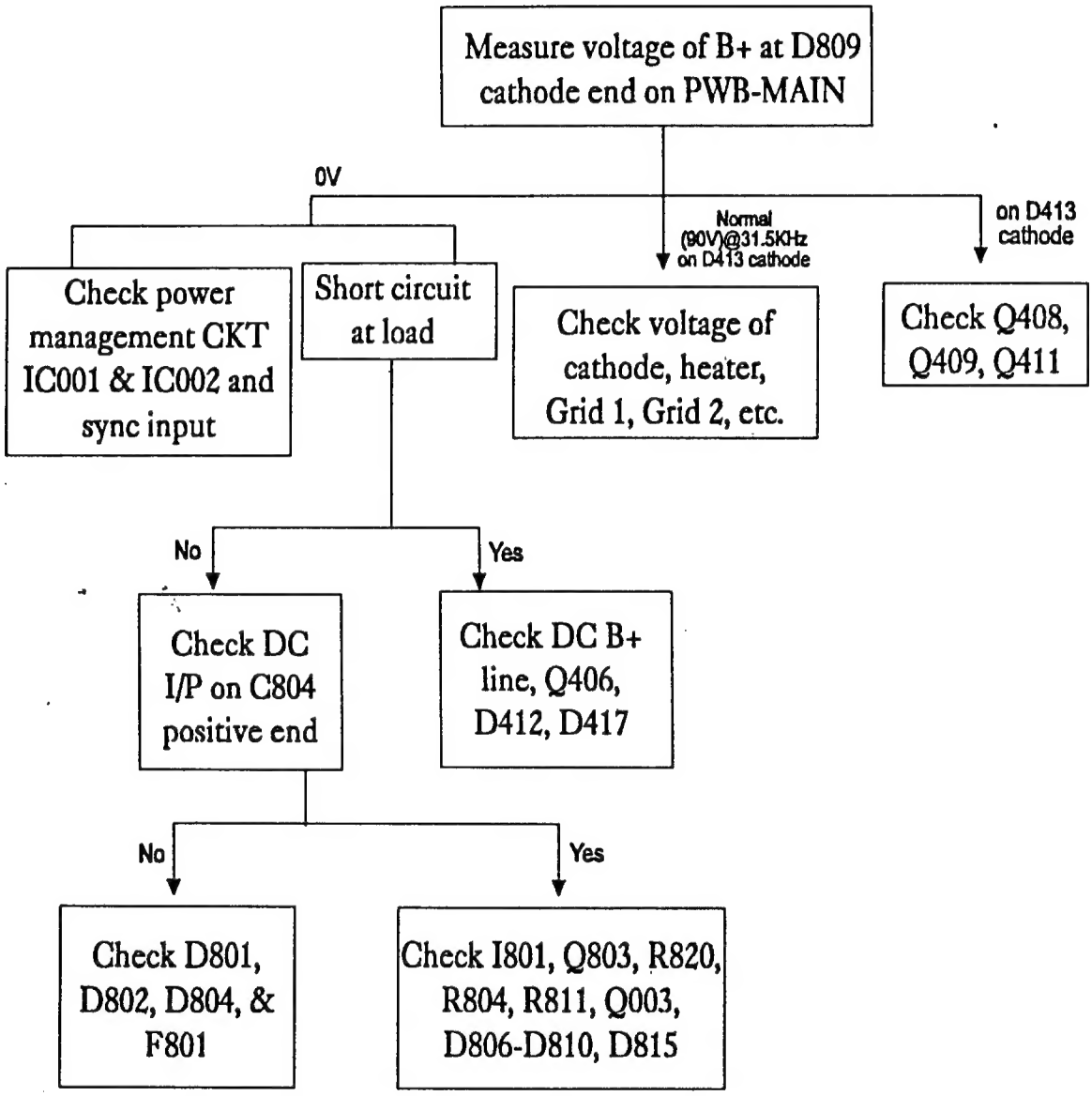
	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6
Hori. Dots	640	720	640	800	1024	640
Vert. Lines	350	400	480	600	768	480
Hori. Frequency (KHz)	31.47	31.47	31.47	35.16	35.52	37.86
Sync. Polarity	POS	NEG	NEG	POS/ NEG	POS	NEG
A us	31.78	31.78	31.78	28.44	28.1	26.413
B us	3.81	3.81	3.81	2	3.91	1.27
C us	1.907	1.907	1.907	3.556	1.25	4.06
D us	25.42	25.42	25.42	22.22	22.81	20.317
E us	0.636	0.636	59.95	0.667	0.178	0.76
Vert. Frequency (Hz)	70.08	70.08	72.19	56.25	86.96	72.81
Sync. Polarity	POS	POS	POS	POS/ NEG	POS	NEG
A ms	14.27	14.27	16.68	17.78	11.5	13.735
B us	0.064	0.064	0.064	0.057	0.112	0.079
C us	1.87	1.08	1.02	0.626	0.577/ 0.653	0.74
D ms	11.12	12.71	15.25	17.07	10.82	12.678
E ms	1.21	0.413	0.35	0.053	14μ S/0	0.238



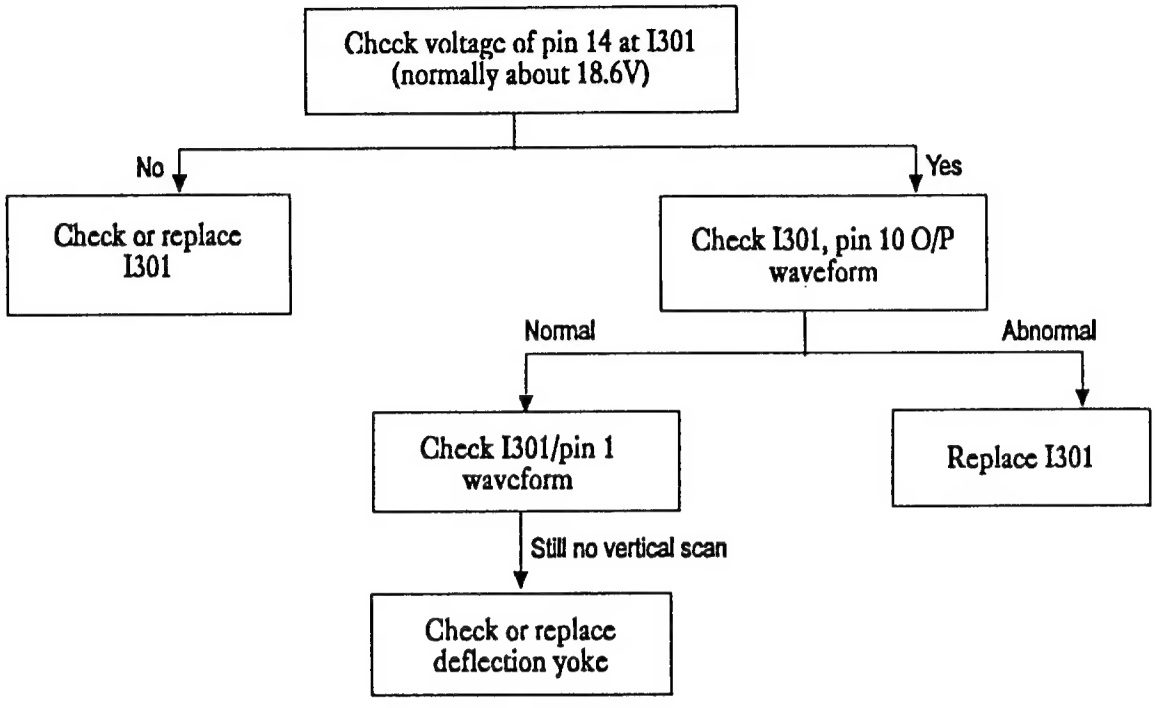
	Mode 7	Mode 8	Mode 9	Mode 10	Mode 11
Hori. Dots	800	640	720	800	1024
Vert. Lines	600	350	400	600	768
Hori. Frequency (KHz)	37.88	37.86	37.86	48.08	48.36
Sync. Polarity	POS	POS	NEG	POS	NEG
A us	26.4	26.413	26.413	20.8	20.677
B us	3.2	1.27	1.27	2.4	2.23
C us	2.2	4.063	4.063	1.28	2.622
D us	20	20.317	20.317	16	15.75
E us	1	0.762	0.762	1.12	0.639
Vert. Frequency (Hz)	60.32	84.14	84.14	72.01	60
Sync. Polarity	POS	NEG	POS	POS	NEG
A ms	16.58	11.886	11.886	13.87	16.67
B us	0.106	0.079	0.097	0.125	0.124
C us	0.607	1.638	1.004	0.478	0.6
D ms	15.84	9.244	10.565	12.51	15.88
E ms	0.026	0.924	0.238	0.77	0.062

TROUBLE SHOOTING CHART

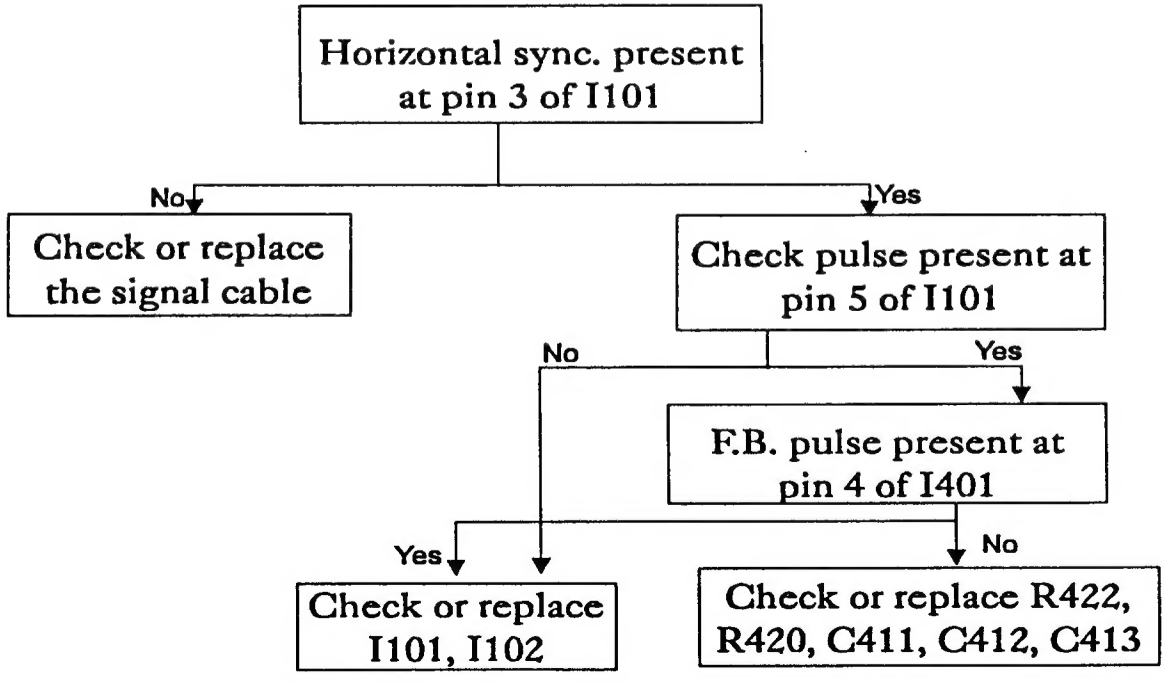
No Raster



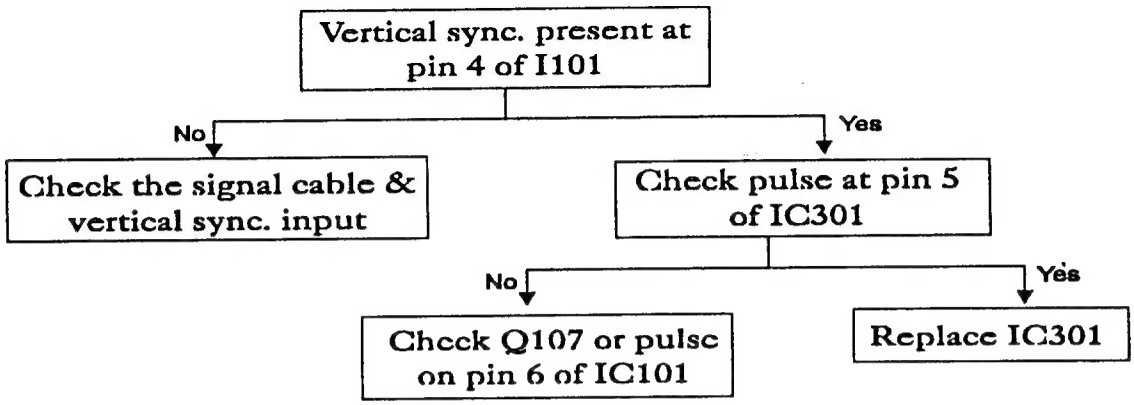
No Vertical Scan (Raster is one horizontal line)



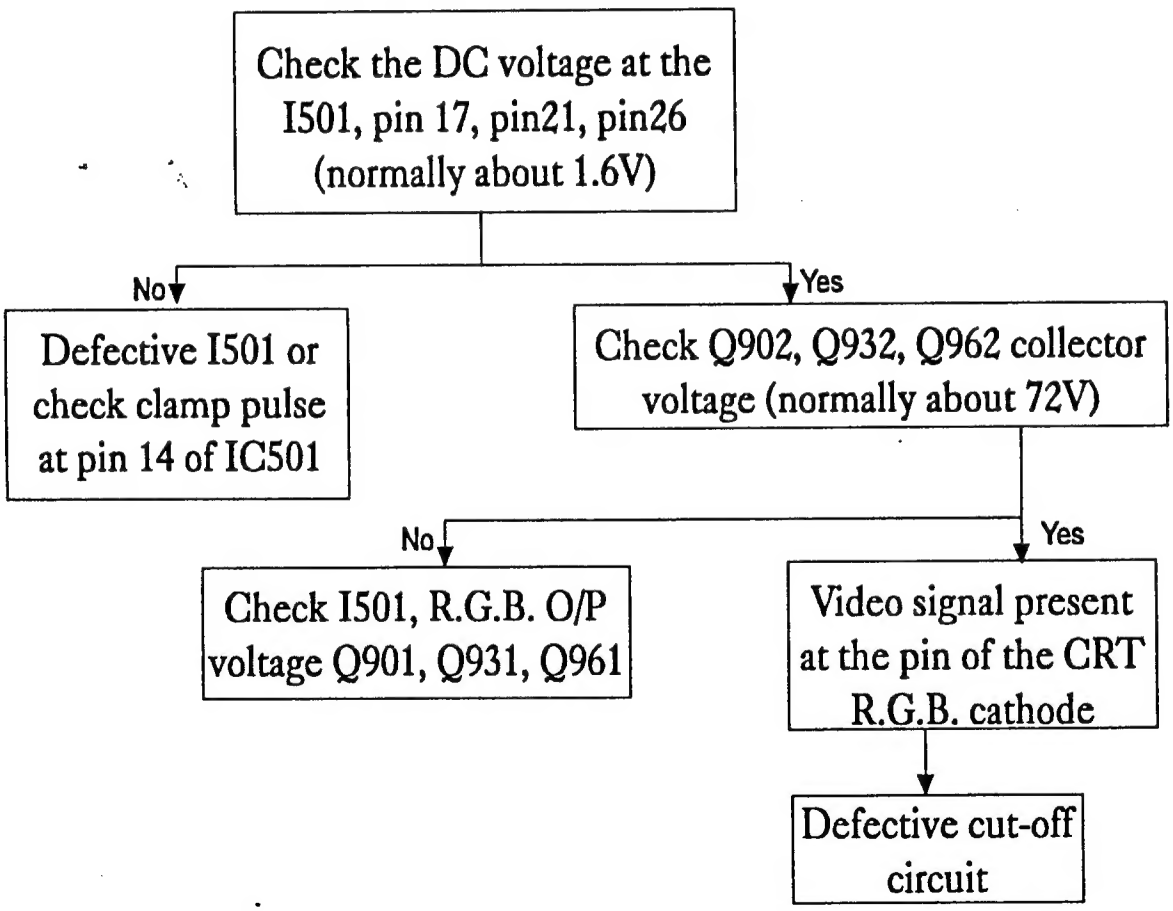
Out of Horizontal Synchronization



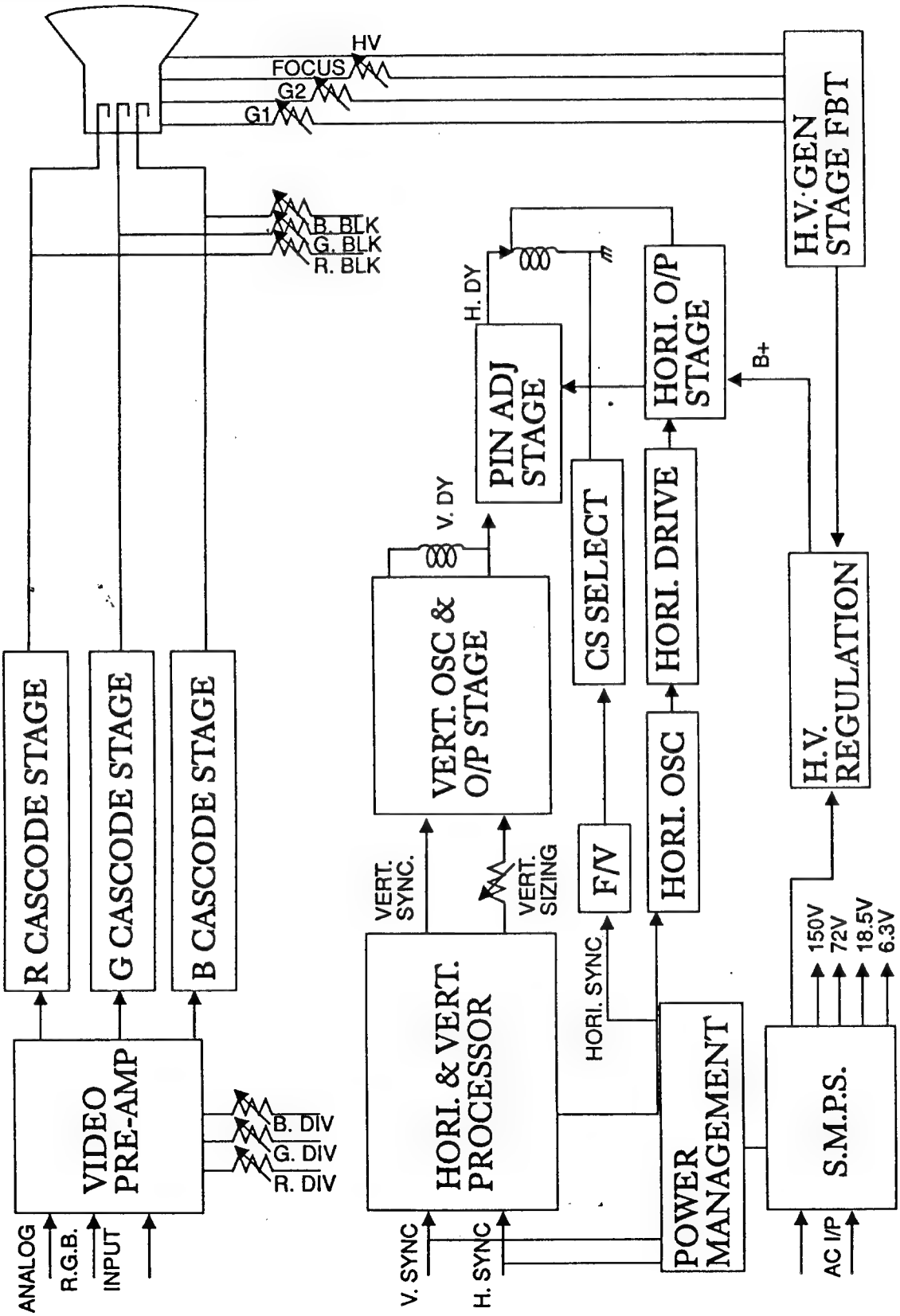
Out of Vertical Synchronization



R. G. B. Video AMP Abnormal

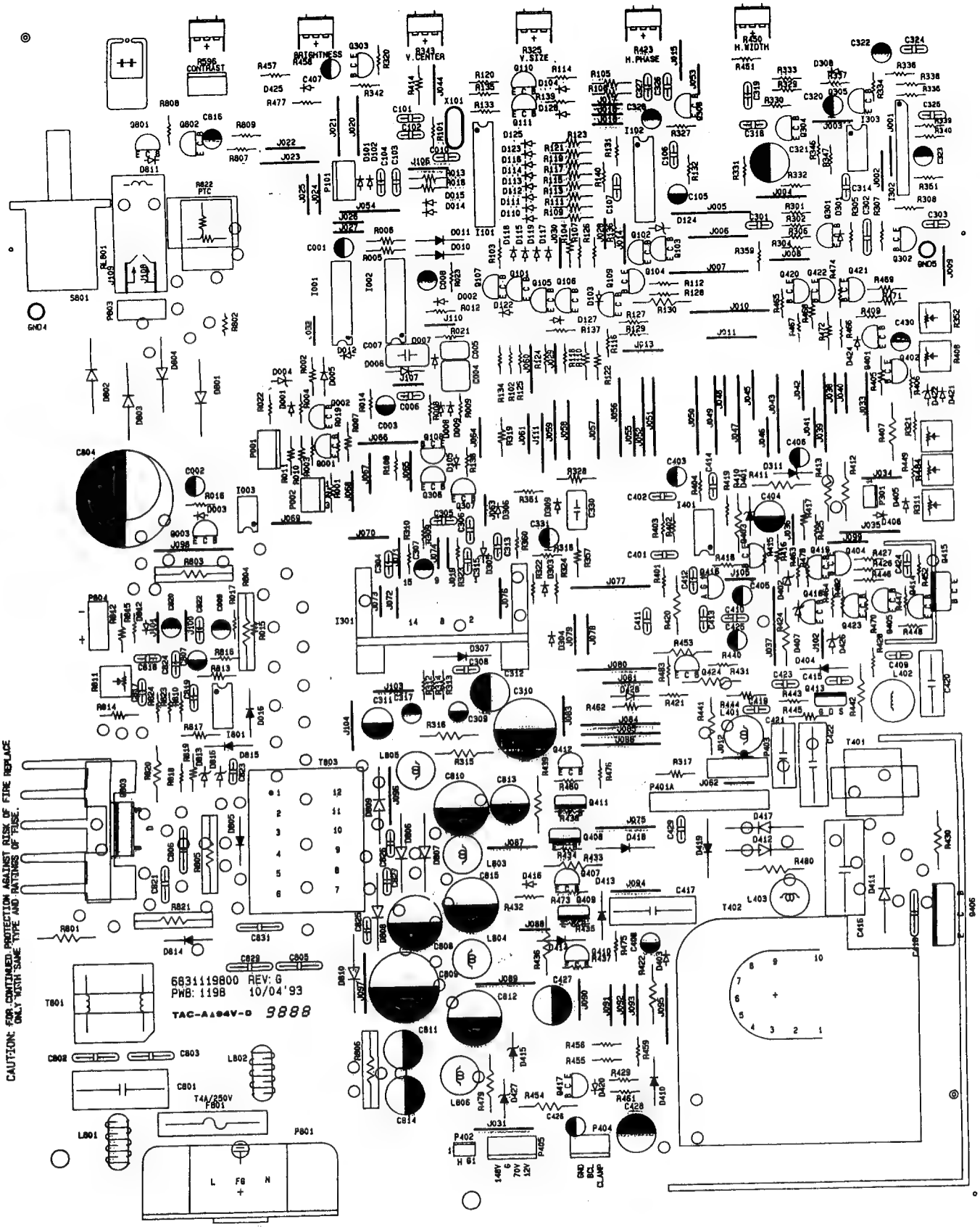


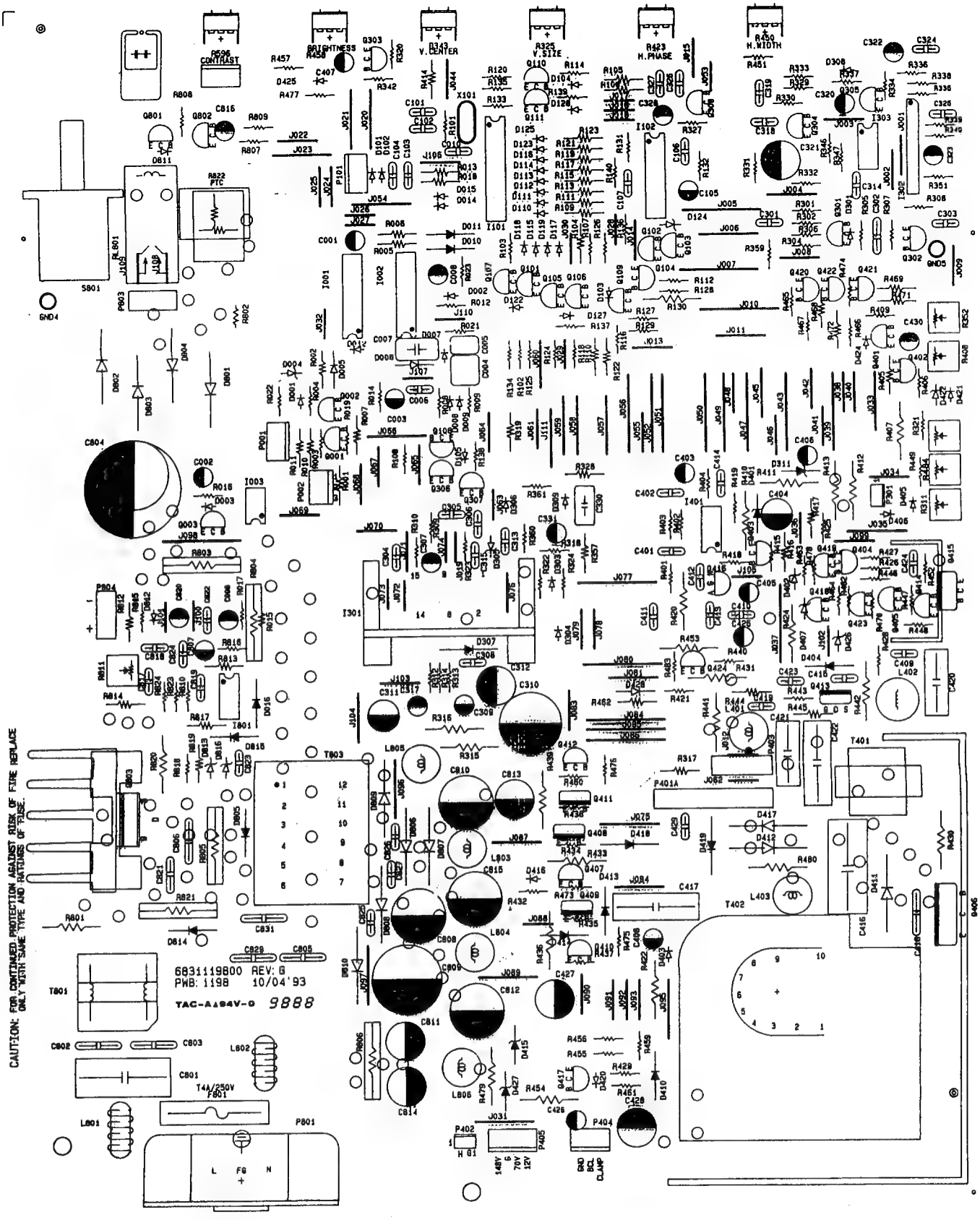
BLOCK DIAGRAM

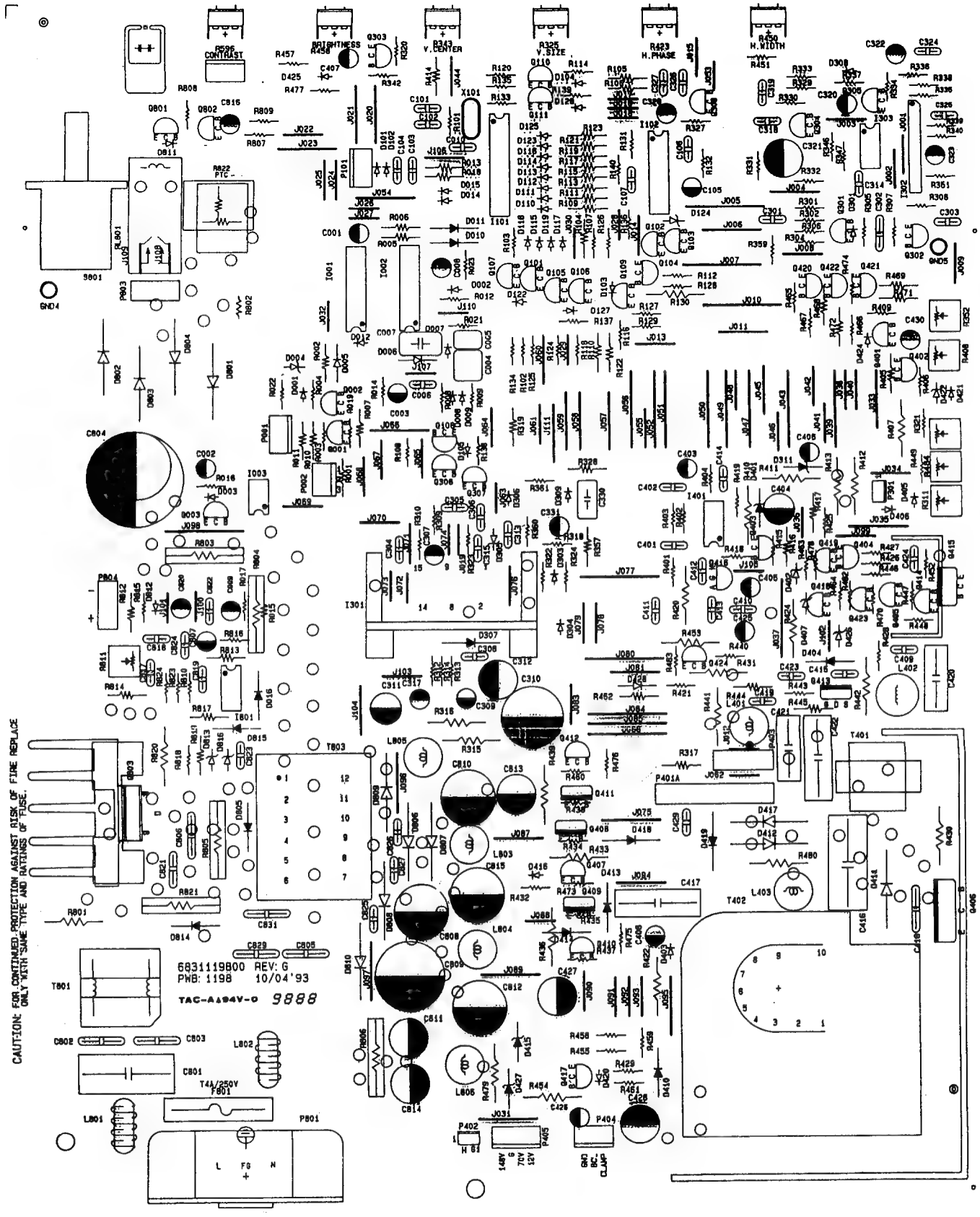


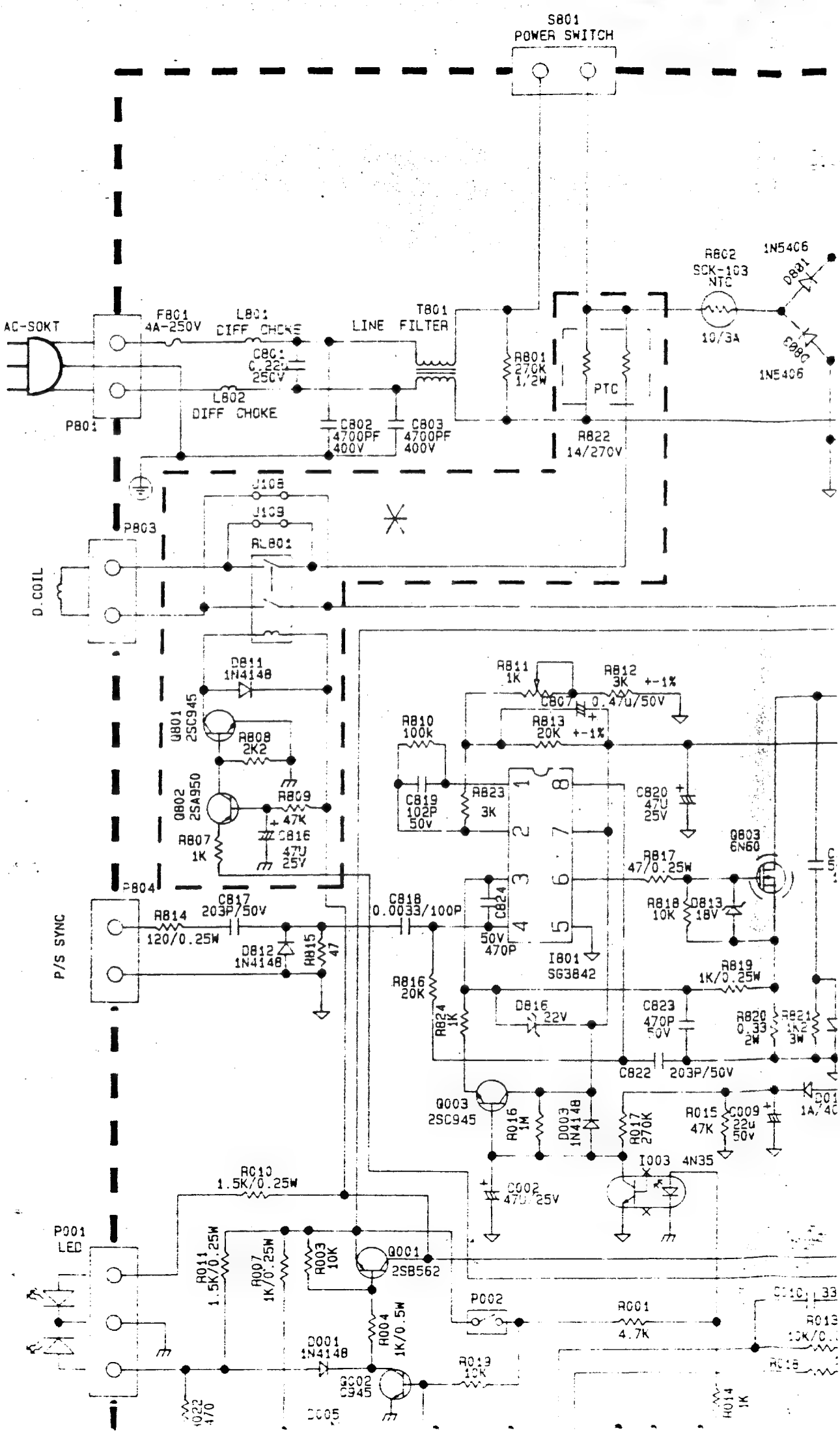
SPARE PARTS LIST

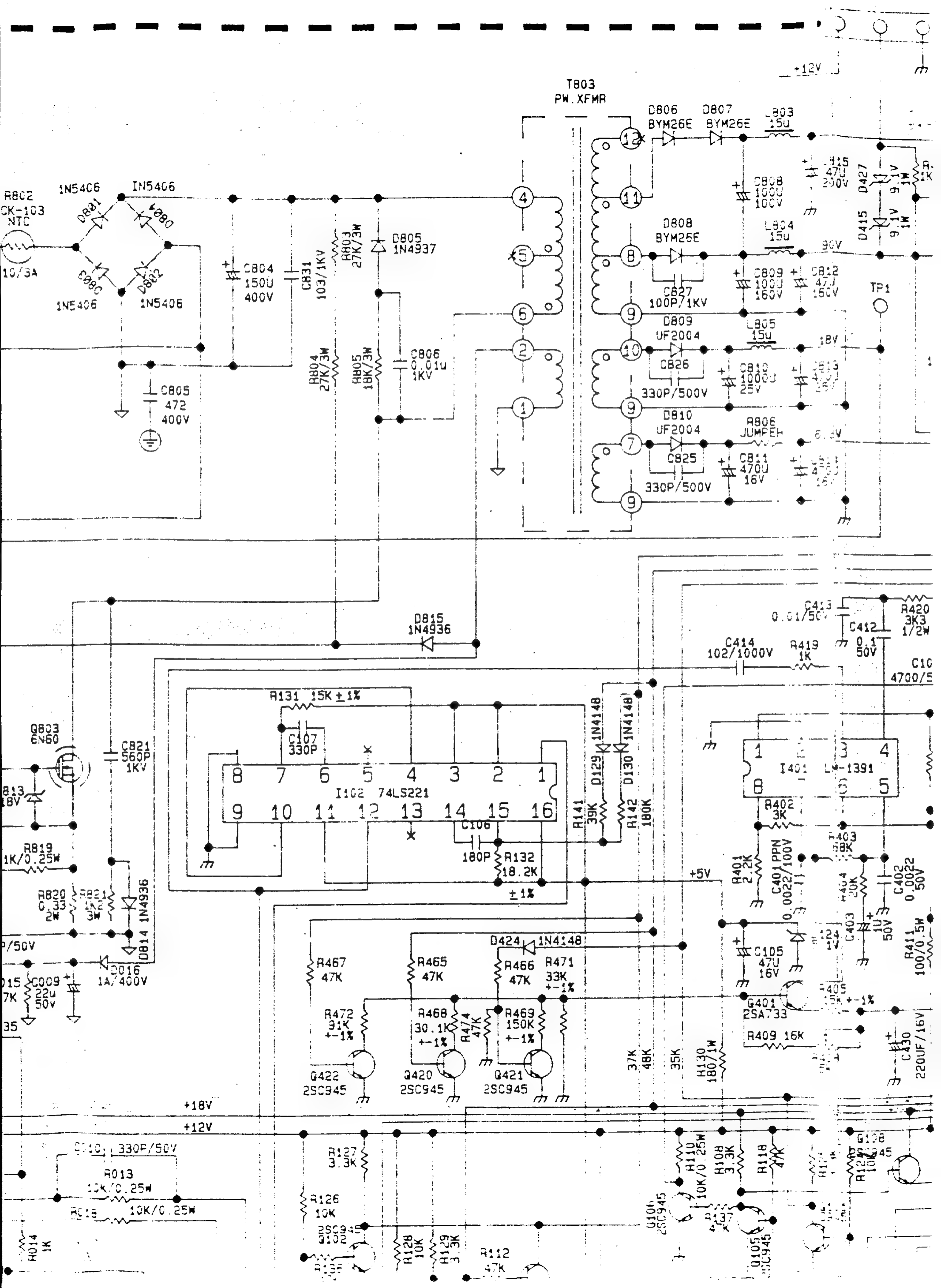
Location	Part Number	Description
Q406	6421000330	TR NPN 2SC4916 TOSHIBA
Q408, Q409, Q411	6424000600	TR PNP 2SB857C HITACHI
Q413	6426000280	FET N-CHNL IRF630 SGS-THOMAS SAMSUNG
Q803	6426001200	FET N-CHNL IRF730 TO-220F SGS-THOMAS SAMSUNG
D809, D810	6412004117	DIODE UF2004 T52 2A/400V 50nS LITE-ON
D808	6412012107	DIODE UF2005 T52 2A/600V 75nS LITE-ON
D806	6412001904	DIODE UF4007 T26 1A/1KV 75nS LITE-ON
D412, D417	6412004817	DIODE PR3006 T52 3A/800V 500nS LITE-ON
D411	6412002017	DIODE UF3004M T52 3A/400V 50nS LITE-ON
I501	6442000502 6442000500	IC 28P MM1203XD PLASTIC DIP MITSUMI IC 28P LINEAR LM1203 VIDEO NS
I801	6442002500	IC 8P LINEAR SG3842M SGS-THOMAS
I003	6442001201	IC 6P LINEAR 4N35 TELEFUNKEN
I301	6442001400	IC 15P LINEAR TPA1675A SGS-THOMAS
I401	6442000300	IC 8P LINEAR MC1391P MOTOROLLA
I101	6442009200	IC 20P WT8043N20 (ASIC) DIP WELTREND
F801	6851004050	FUSE TIME LAG 4A/250V SEMKO BEL

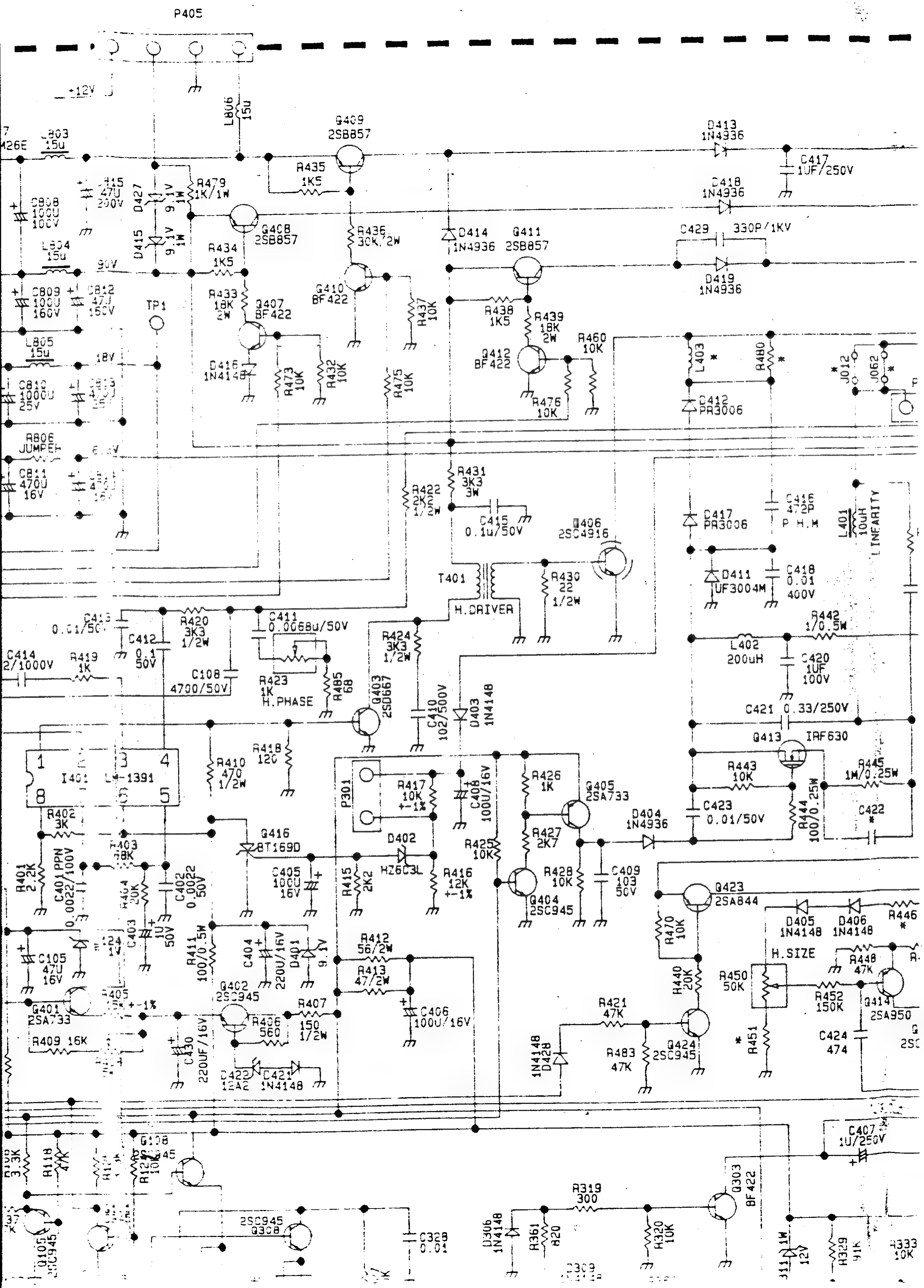

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE ONLY WITH SAME TYPE AND RATINGS OF FUSE.
6831119800 REV: G
PWB: 1198 10/04'93
TAC-A194V-D 9888
T4A/250V
F801
L N FG
CONTRAST
BRIGHTNESS
V.CENTER
V.SIZE
H.PHASE
H.WIDTH


CONTRAST
BRIGHTNESS
V. CENTER
V. SIZE
H. PHASE
H. WIDTH
6831119800 REV: G
PWB: 1198 10/04'93
TAC-A184V-0 9888
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE ONLY WITH SAME TYPE AND RATINGS OF FUSE.

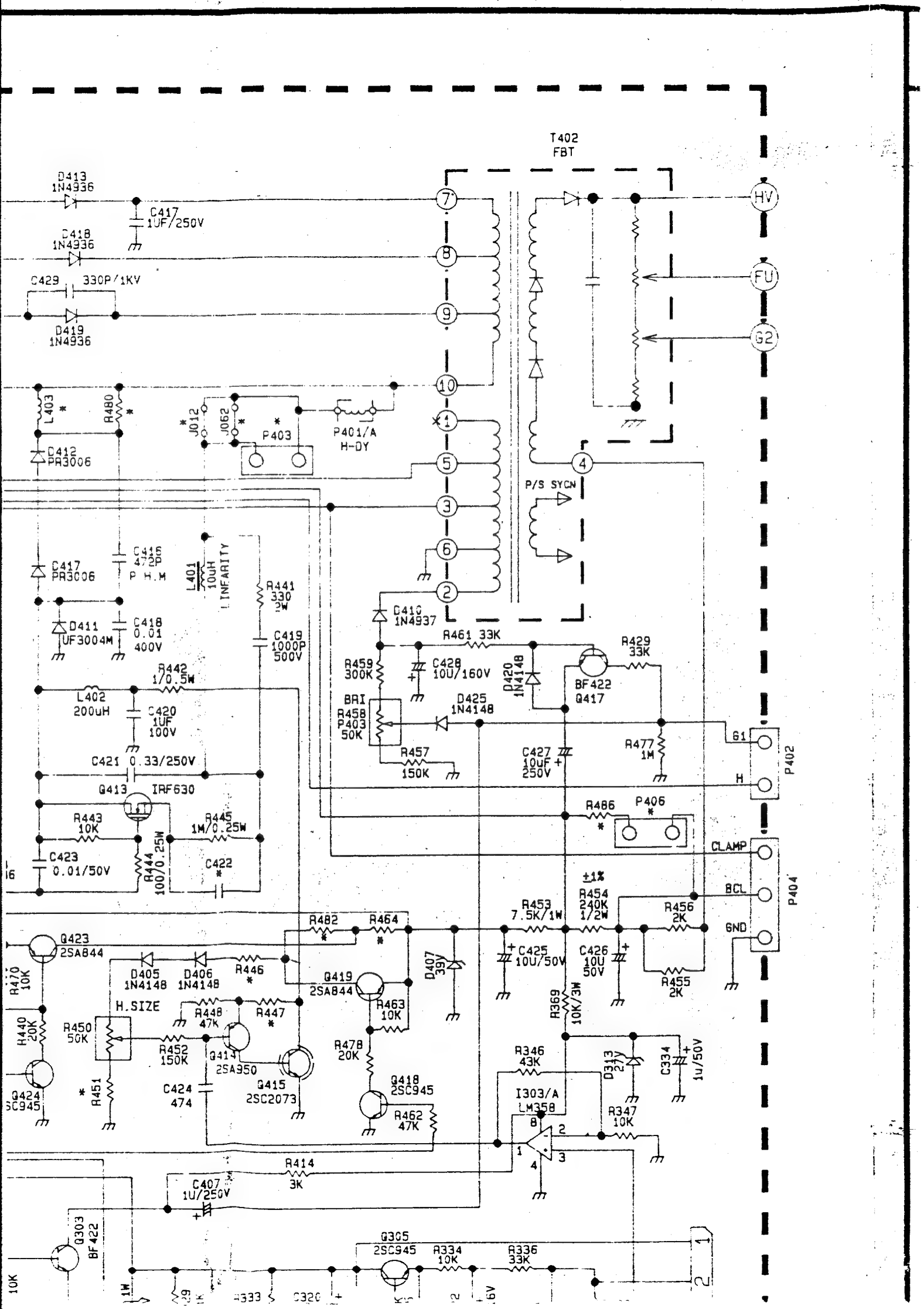

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE ONLY WITH SAME TYPE AND RATINGS OF FUSE.
6831119800 REV: G
PWB: 1198 10/04'93
TAC-A194V-0 9888
T4A/250V
F801
CONTRAST
BRIGHTNESS
V.CENTER
V.SIZE
H.PHASE
H.WIDTH
PTC
L N
FG


S801
POWER SWITCH
AC-SOKT
F801
4A-250V
L801
DIFF CHOKE
T801
LINE FILTER
C801
0.22U
250V
L802
DIFF CHOKE
P801
C802
4700PF
400V
C803
4700PF
400V
R801
270K
1/2W
PTC
R822
14/270V
R802
SCK-103
NTC
10/3A
1N5406
D801
D802
1N5406
J108
J109
RL801
P803
D.COIL
D811
1N4148
Q801
2SC945
R808
2K2
Q802
2SA950
R809
47K
C816
47U
25V
R807
1K
P804
P/S SYNC
C817
203P/50V
R814
120/0.25W
D812
1N4148
R815
47
C818
0.0033/100P
R811
1K
R812
3K
+-1%
C807
0.47U/50V
R813
20K
+-1%
R810
100K
C819
102P
50V
R823
3K
C824
50V
470P
I801
SG3842
C820
470
25V
Q803
6N60
R817
47/0.25W
R818
10K
D813
18V
R816
20K
R824
1K
D816
22V
C823
470P
50V
R820
0.33
2W
R821
1K/2
3W
R819
1K/0.25W
C822
203P/50V
Q003
2SC945
R016
1M
D003
1N4148
R017
270K
R015
47K
C009
22U
50V
I003
4N35
C002
470U
25V
R010
1.5K/0.25W
P001
LED
R011
1.5K/0.25W
R007
1K/0.25W
R003
10K
Q001
2SB562
P002
R001
4.7K
R004
1K/0.5W
D001
1N4148
Q002
C945
R019
10K
R022
470
D005
R014
1K


T803
PW.XFMR
D806
BYM26E
D807
BYM26E
L803
15u
+12V
R802
CK-103
NTC
10/3A
1N5406
D801
D804
D803
D802
C804
150U
400V
C831
103/1KV
R803
27K/3W
D805
1N4937
C805
472
400V
R804
27K/3W
R805
18K/3W
C806
0.01u
1KV
C808
100U
100V
R415
47U
200V
D427
9.1V
1W
D415
9.1V
1W
D808
BYM26E
L804
15u
90V
C827
100P/1KV
C809
100U
160V
C812
47U
160V
TP1
D809
UF2004
L805
15u
18V
C826
330P/500V
C810
1000U
25V
D810
UF2004
R806
JUMPER
C825
330P/500V
C811
470U
16V
D815
1N4936
C413
0.01/50V
R420
3K3
1/2W
C412
0.1
50V
C414
102/1000V
R419
1K
4700/5
Q803
6N60
C821
560P
1KV
R131 15K ±1%
C107
330P
I102 74LS221
D129 1N4148
D130 1N4148
R141 39K
R142 180K
C106
180P
R132
18.2K
±1%
I401 LM-1391
R402
3K
R403
68K
R401
2.2K
C401 PPN
0.0022/100V
R404
20K
C402
0.0022
50V
C403
1U
50V
R411
100/0.5W
+5V
R819
1K/0.25W
R820
0.33
2W
R821
1K2
3W
D814
1N4936
D016
1A/400V
C009
22u
50V
C105
47U
16V
D424 1N4148
R467
47K
R465
47K
R466
47K
R471
33K
+-1%
R472
91K
+-1%
R468
30.1K
+-1%
R474
47K
R469
150K
+-1%
Q422
2SC945
Q420
2SC945
Q421
2SC945
37K
48K
35K
R130
180/1W
Q401
2SA733
R405
15K +-1%
R409 16K
C430
220UF/16V
+18V
+12V
C010 330P/50V
R013
10K/0.25W
R015 10K/0.25W
R014
1K
R127
3.3K
R126
10K
2SC945
Q102
R128
10K
R129
3.3K
R112
47K
Q106
2SC945
R110
10K/0.25W
R108
3.3K
R118
47K
R137
Q105
2SC945
Q108
2SC945



P405
+12V
L806 15u
Q409 2SB857
D413 1N4936
C417 1UF/250V
L803 15u
C808 100U 100V
C415 47U 200V
D427 9.1V 1W
R479 1K/1W
R435 1K5
D418 1N4936
D415 9.1V 1W
Q408 2SB857
R436 30K/2W
D414 1N4936
Q411 2SB857
C429 330P/1KV
L804 15u
90V
R434 1K5
D419 1N4936
C809 100U 160V
C812 47U 150V
TP1
R433 18K 2W
Q407 BF422
Q410 BF422
R437 10K
R438 1K5
R439 18K 2W
L805 15u
18V
R460 10K
Q412 BF422
L403 *
R480 *
J012 *
J062 *
C810 1000U 25V
D416 1N4148
R473 10K
R432 10K
R475 10K
R476 10K
D412 PR3006
R806 JUMPER
C811 470U 16V
R431 3K3 3W
R422 2K2 1/2W
C415 0.1u/50V
Q406 2SC4916
D417 PR3006
C416 472P P.H.M
L401 10uH LINEARITY
T401
H.DRIVER
R430 22 1/2W
D411 UF3004M
C418 0.01 400V
C413 0.01/50V
R420 3K3 1/2W
C411 0.0068u/50V
R424 3K3 1/2W
R442 1/0.5W
C414 2/1000V
R419 1K
C412 0.1 50V
C108 4700/50V
R423 1K H.PHASE
R485 68
Q403 2SD667
C410 102/500V
D403 1N4148
L402 200uH
C420 1UF 100V
C421 0.33/250V
Q413 IRF630
I401 LA-1391
R410 470 1/2W
R418 120
P301
R417 10K +-1%
C408 100U/16V
R426 1K
Q405 2SA733
R443 10K
R445 1M/0.25W
R444 100/0.25W
R402 3K
R403 68K
Q416 BT169D
D402 HZ6C3L
R427 2K7
D404 1N4936
C423 0.01/50V
C422 *
R401 2.2K
C401 PPN 0.0022/100V
R404 20K
C402 0.0022 50V
C405 100U 16V
R415 2K2
R416 12K +-1%
R425 10K
R428 10K
C409 103 50V
Q404 2SC945
Q423 2SA844
D405 1N4148
D406 1N4148
R446 *
C105 47U 16V
C403 1U 50V
R411 100/0.5W
C404 220U/16V
D401 9.1V
R412 56/2W
R413 47/2W
R470 10K
H.SIZE
R448 47K
R450 50K
R440 20K
Q401 2SA733
R405 15K +-1%
Q402 2SC945
R406 560
R407 150 1/2W
C406 100U/16V
R421 47K
R452 150K
Q414 2SA950
R409 16K
C430 220UF/16V
D422 12A2
D421 1N4148
D428 1N4148
R483 47K
Q424 2SC945
R451 *
C424 474
C407 1U/250V
R118 47K
G108 2SC945
Q303 BF422
R319 300
Q105 2SC945
2SC945 Q308
C328 0.01
D306 1N4148
R361 820
R320 10K
12V
R329 91K
R333 10K


T402
FBT
D413
1N4936
C417
1UF/250V
D418
1N4936
C429
330P/1KV
D419
1N4936
L403
R480
D412
PR3006
J012
J062
P403
P401/A
H-DY
HV
FU
G2
P/S SYCN
D417
PR3006
C416
472P
P.H.M
L401
10uH
LINEARITY
R441
330
2W
D411
UF3004M
C418
0.01
400V
C419
1000P
500V
D410
1N4937
R461 33K
R459
300K
C428
10U/160V
D420
1N4148
BF422
Q417
R429
33K
R442
1/0.5W
L402
200uH
C420
1UF
100V
BRI
R458
P403
50K
D425
1N4148
R457
150K
C427
10UF
250V
R477
1M
G1
H
P402
C421 0.33/250V
Q413 IRF630
R443
10K
R445
1M/0.25W
C423
0.01/50V
R444
100/0.25W
C422
R486
P406
CLAMP
BCL
GND
P404
±1%
R454
240K
1/2W
R453
7.5K/1W
R456
2K
R455
2K
C425
10U/50V
C426
10U
50V
R369
10K/3W
R482
R464
Q423
2SA844
D405
1N4148
D406
1N4148
R446
Q419
2SA844
D407
39V
R463
10K
H.SIZE
R448
47K
R447
R450
50K
R452
150K
Q414
2SA950
Q415
2SC2073
R451
C424
474
R478
20K
Q418
2SC945
R462
47K
R470
10K
R440
20K
Q424
2SC945
R346
43K
D313
27V
C334
1u/50V
I303/A
LM358
R347
10K
R414
3K
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Q305
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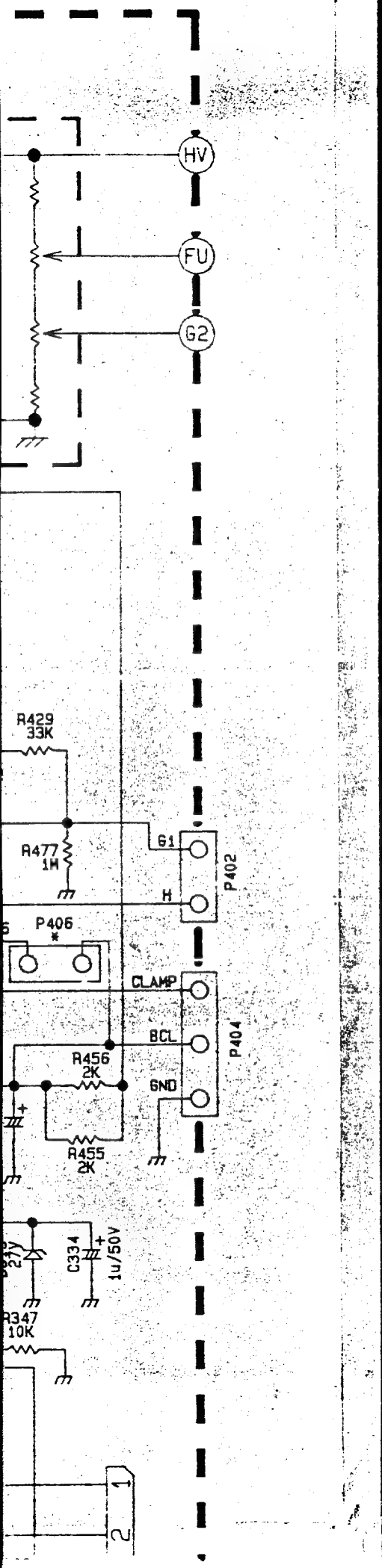
10K
R336
33K
10K
1W



REVISION HISTORY

REV.: 01 DATE: 02/01'94

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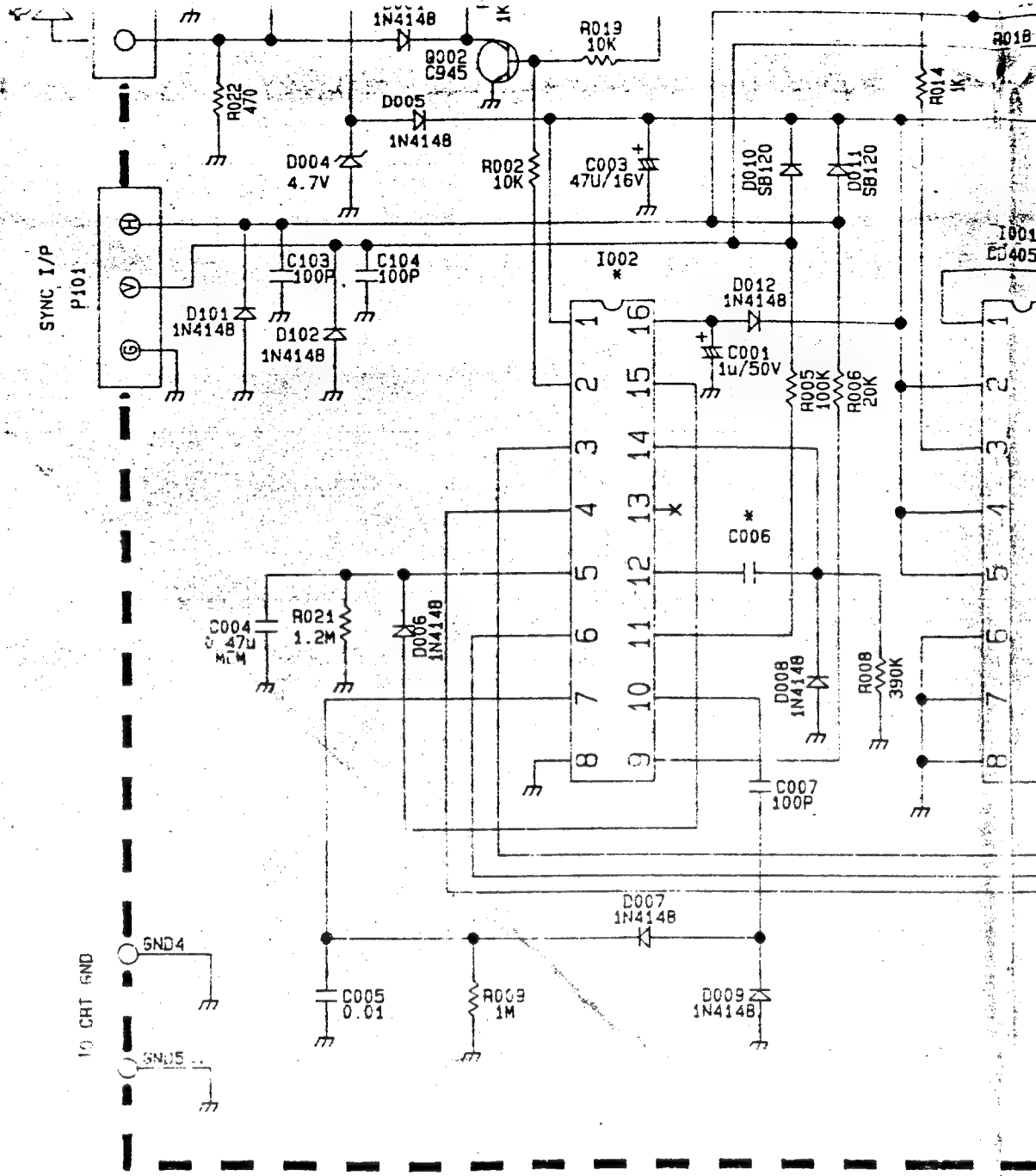
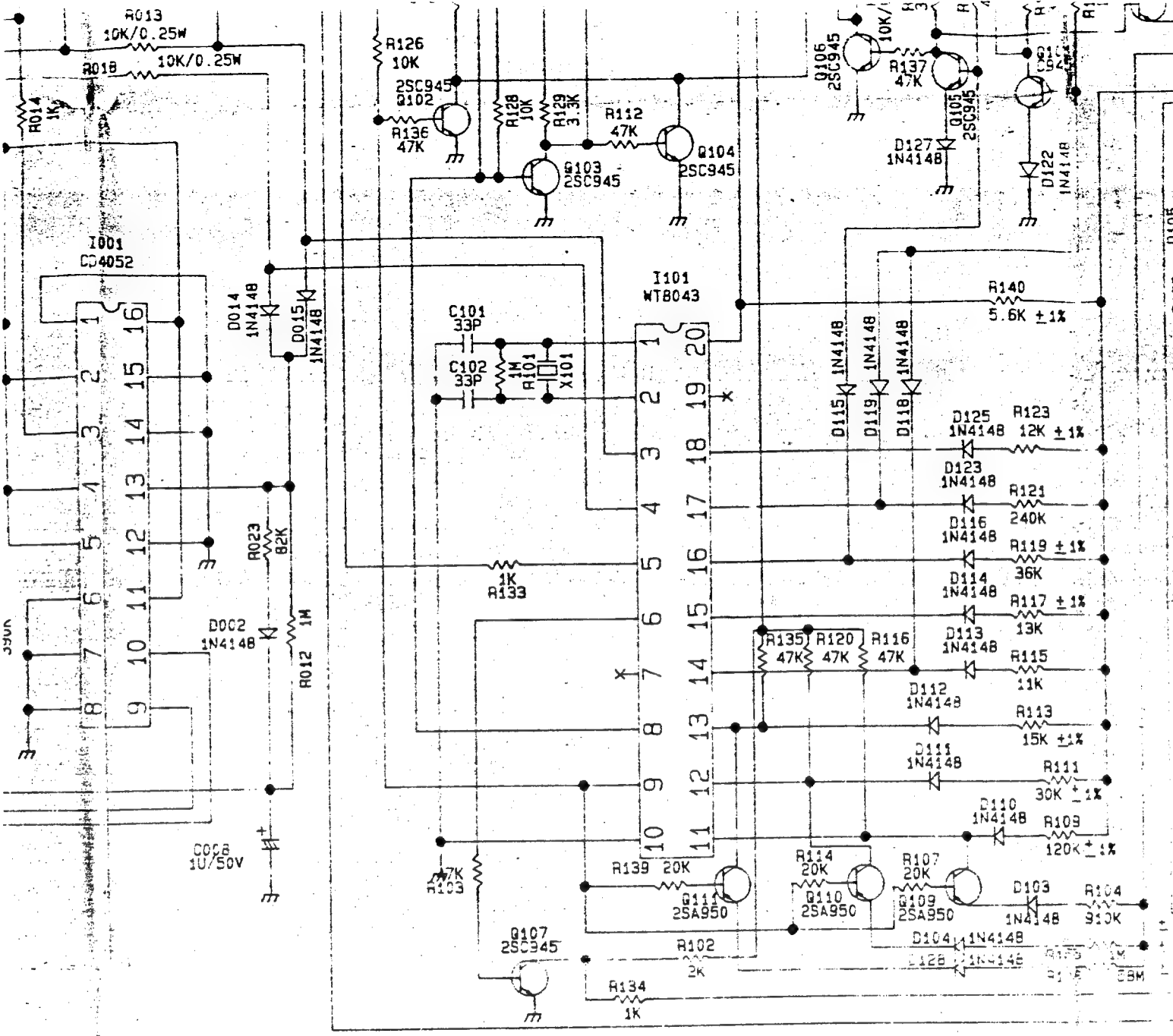
ECN NO: 9000002203	11/26'93
ECN NO: 9000002211	11/29'93
ECN NO: 9000002219	12/03'93
ECN NO: 9000002240	12/13'93
ECN NO: 9000002249	12/16'93
ECN NO: 9000002260	12/22'93
ECN NO: 9000002270	12/28'93
ECN NO: 9000002281	01/05'94
ECN NO: 9000002289	01/11'94
ECN NO: 9000002323	01/25'94

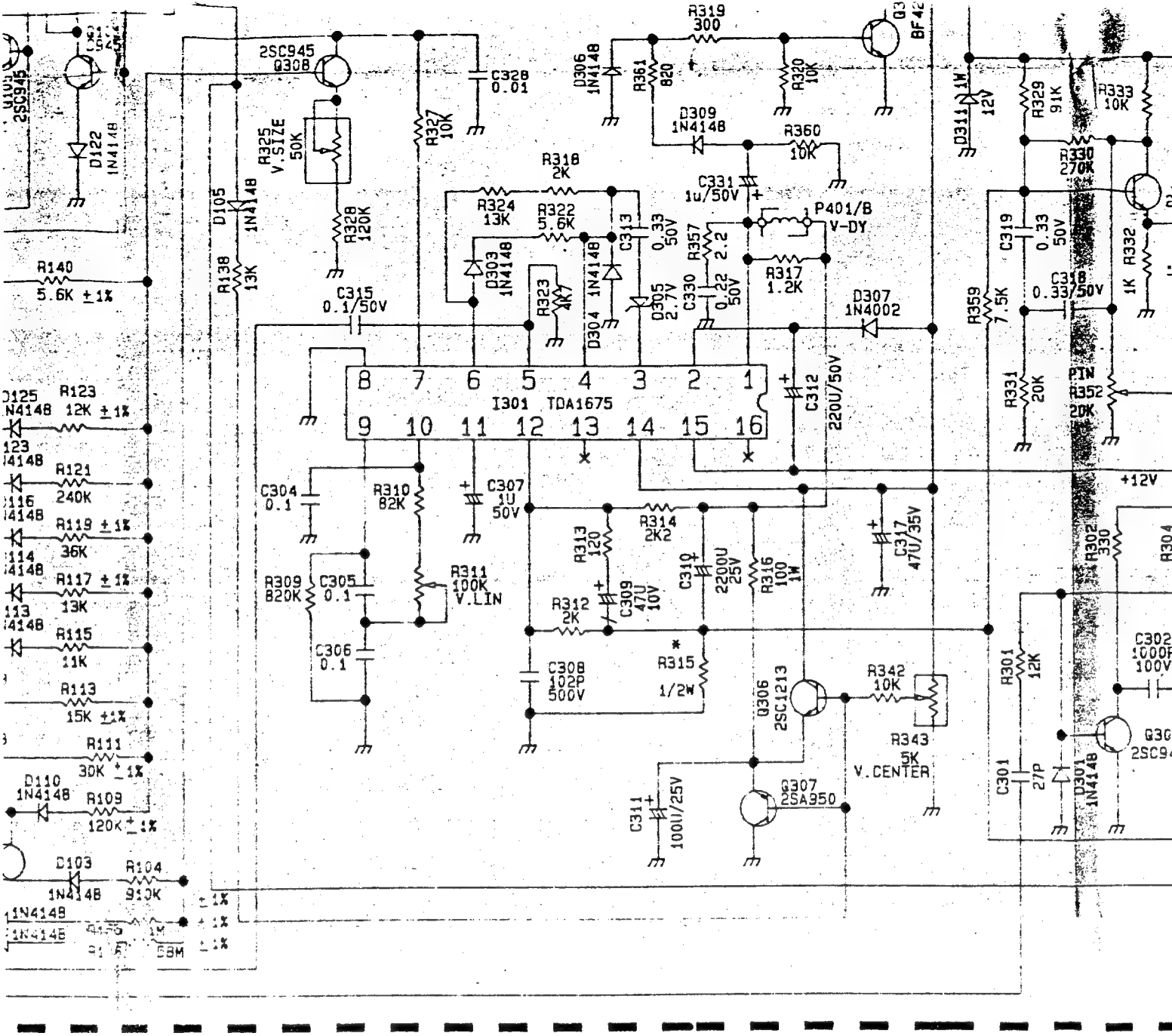


I002 / LOCATION	TC4010	CD4010
C006	82P	220P

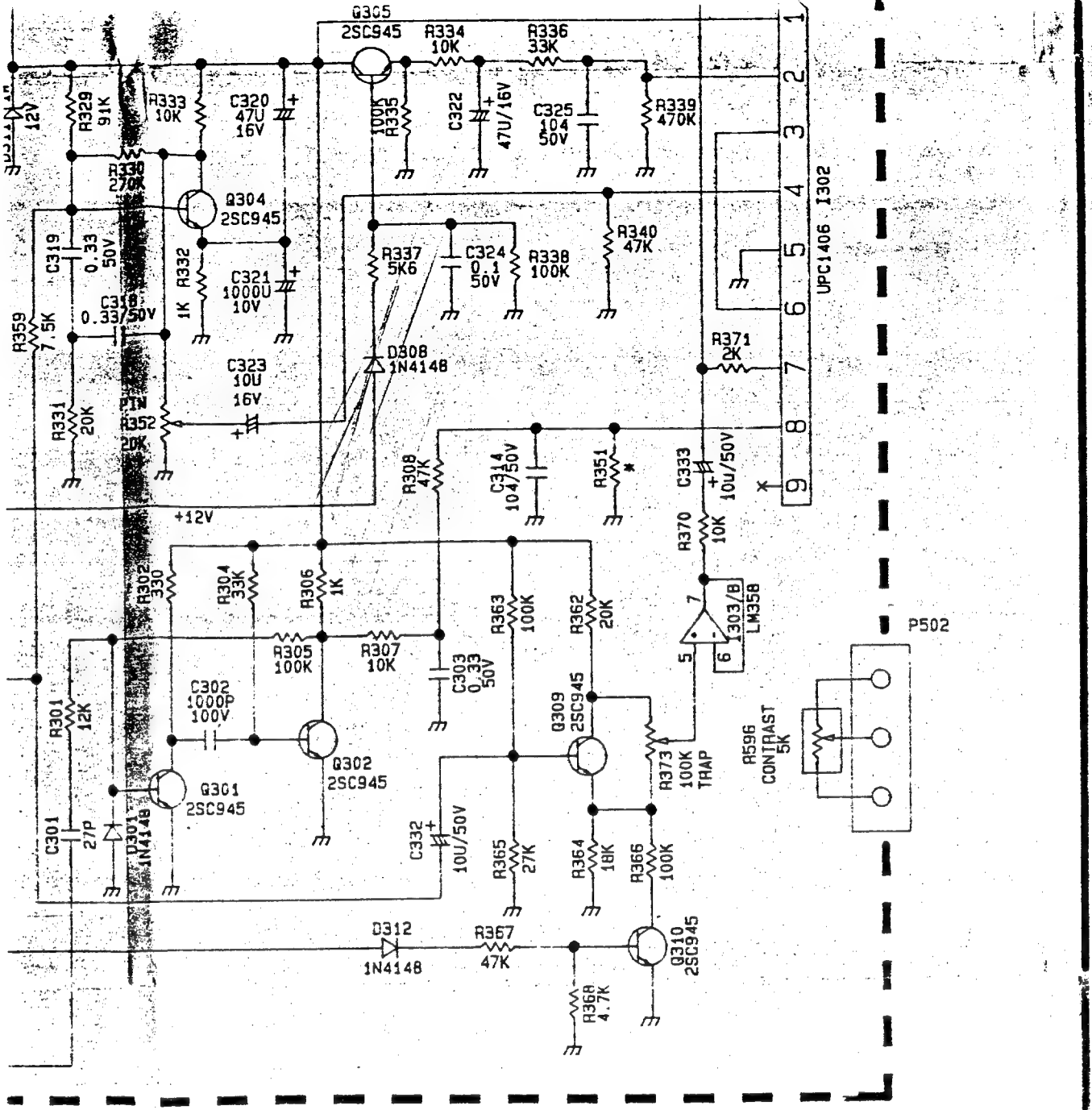
CRT / LOCATION	MATSH (CO) M34KNZ280X05	CPT (CA) M34AFA80X18
R464	24K	36K
R451	6.2K	5.1K
R446	6.2K	18K
R447	68	68
R482	27K	39K
R315	1.0	1.1
L403	JUMPER	3.2u
R480	JUMPER	33/2W
R351	180K	180K
J012	-	JUMPER
J062	-	JUMPER
P403	6614030010	-
C422	0.39u/250V	0.39u/250V
R486	-	2.2M
P406	-	6611C2000



1448TLR					1448T				
CPT (CA)	HIT (CB)				MATSH (CO)	CPT (CA)	HIT (CB)		
M34AFA80X18	M34KDD50X02 (S)				M34KNZ280X05	M34AFA60X03	M34KDD50X02 (J)		
36K	24K				24K	24K	24K		
5.1K	8.2K				8.2K	18K	8.2K		
18K	6.2K				6.2K	6.2K	6.2K		
68	560				560	560	560		
39K	27K				27K	39K	27K		
1.1	1.1				1.0	1.1	1.1		
3.2u	JUMPER				JUMPER	3.2u	JUMPER		
33/2W	JUMPER				JUMPER	33/2W	JUMPER		
180K	120K				180K	180K	120K		
JUMPER	-				JUMPER	JUMPER	JUMPER		
JUMPER	-				JUMPER	JUMPER	JUMPER		
-	5614030010				-	-	-		
0.39u/250V	0.33u/250V				0.39u/250V	0.39u/250V	0.33u/250V		
2.2M	-				-	2.2M	-		
6611020090	-				-	6611020090	-		



	1448TLR	1448T
LOCATION		
T402	6133048061	6133048060
R822	6203140017	6203140037
RL801	6854000040	-
D811	IN4148	-
Q801	2SC945	-
Q802	2SA950	-
C816	47u/25V	-
R807	1K	-
R808	2.2K	-
R809	47K	-
T402M	7746201150	-
J108	-	JUMPER
J109	-	JUMPER



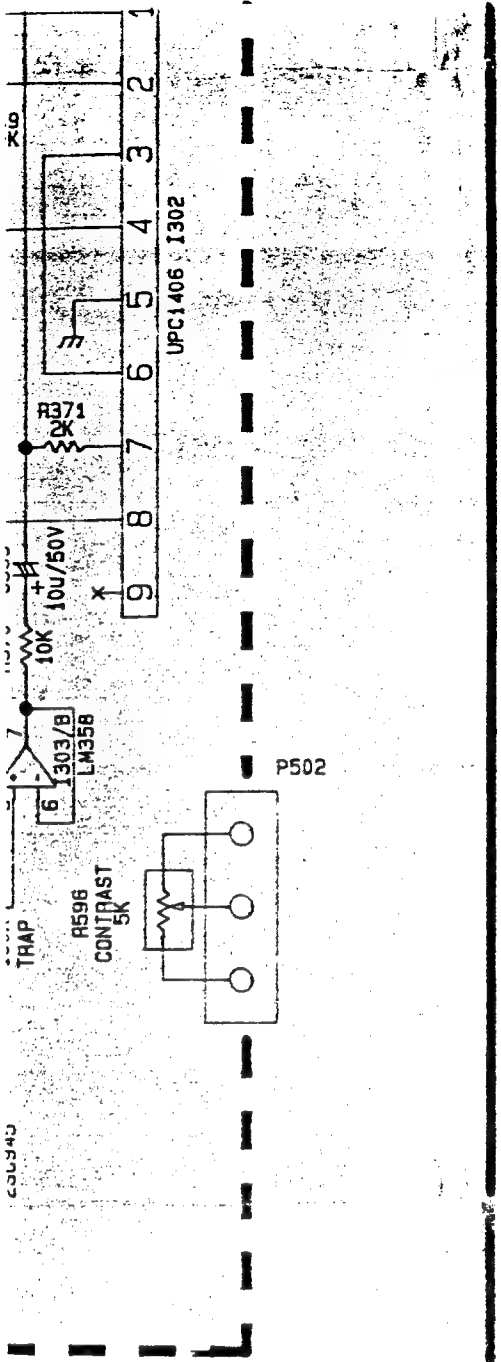
DRAWN : Regina Ni 4.94	DATE : 02/01'94
CHECK :	DATE :
APPRO :	DATE :
DESING : John Chen	DATE : 2/5/94
CHECK : John Chen	DATE : 2/5/94
APPRO :	DATE :

TA

Model: Ergo

DWG No: 891

PCB No: 683



PASSED
QUALITY
ASSURANCE
001

E :
/01'94

E :

E :

E :
/5-/94

E :
/5-/94

E :

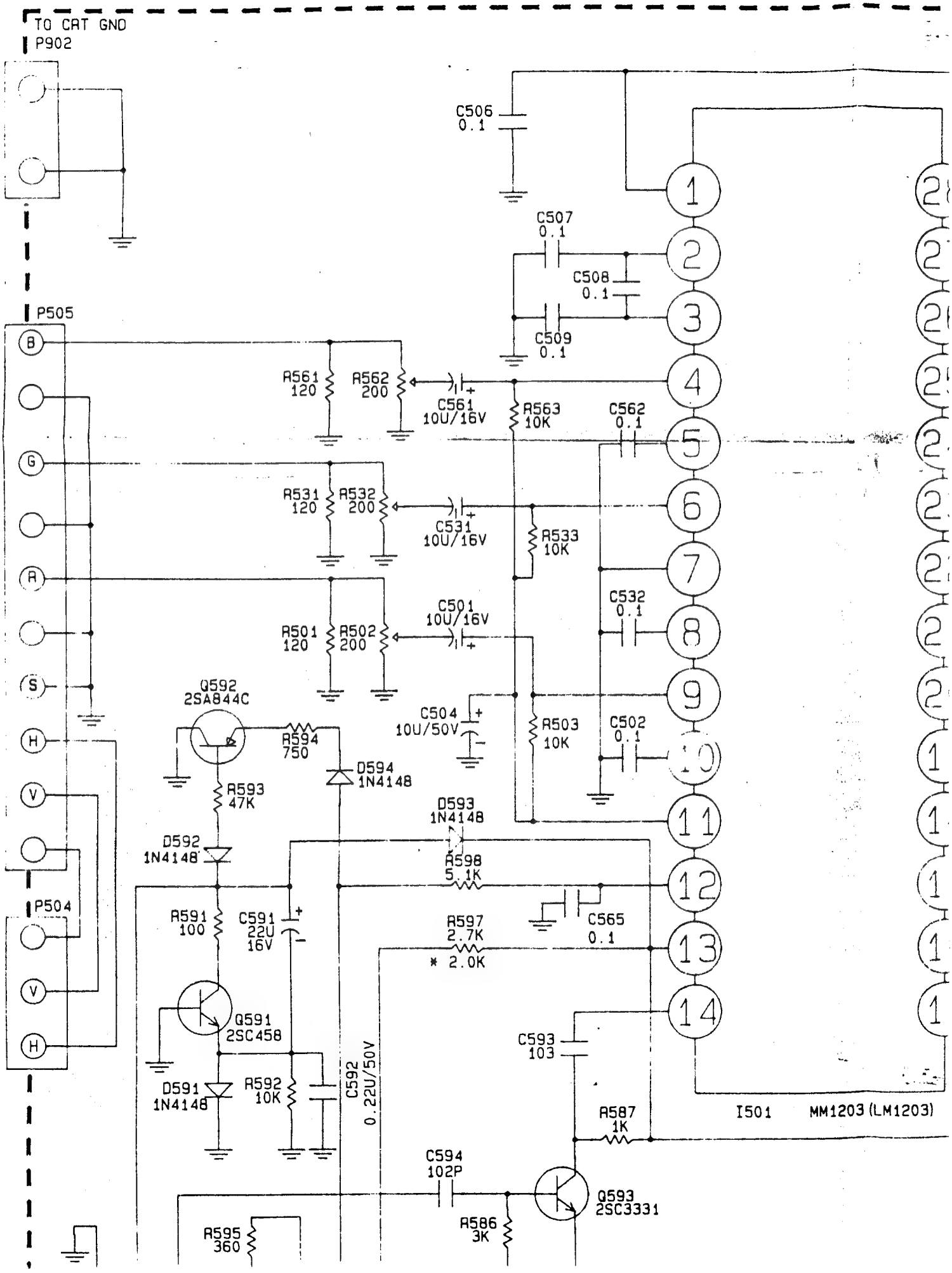
TAXAN

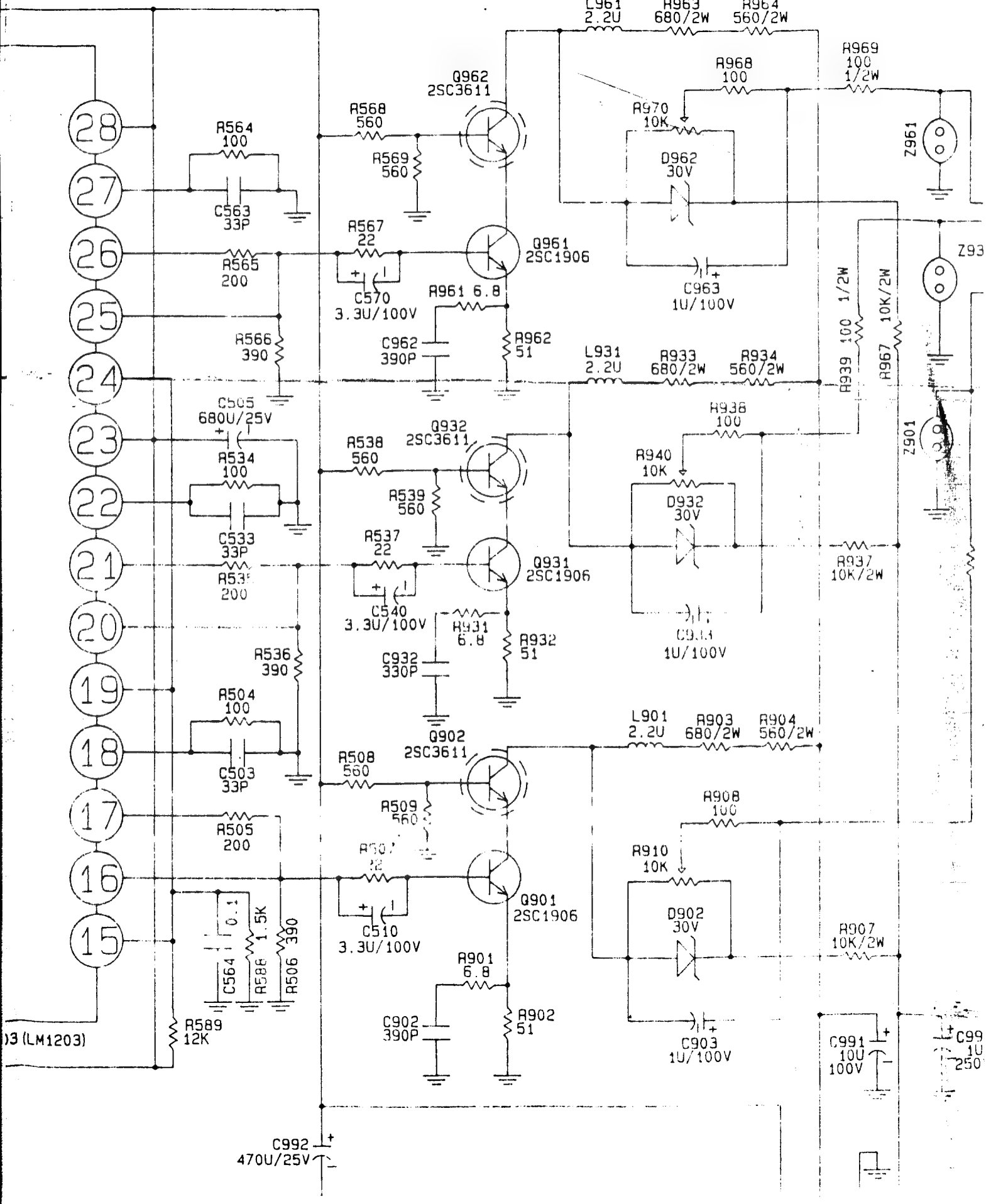
Model: **Ergovision 410LR**

DWG No: **8911980000**

PCB No: **6831119800**

Rev:02


TO CRT GND
P902
P505
P504
C506 0.1
C507 0.1
C508 0.1
C509 0.1
R561 120
R562 200
C561 10U/16V
R563 10K
C562 0.1
R531 120
R532 200
C531 10U/16V
R533 10K
C532 0.1
R501 120
R502 200
C501 10U/16V
C504 10U/50V
R503 10K
C502 0.1
Q592 2SA844C
R594 750
D594 1N4148
R593 47K
D593 1N4148
D592 1N4148
R598 5.1K
R591 100
C591 22U 16V
R597 2.7K
* 2.0K
C565 0.1
Q591 2SC458
D591 1N4148
R592 10K
C592 0.22U/50V
C593 103
R587 1K
I501 MM1203 (LM1203)
C594 102P
Q593 2SC3331
R586 3K
R595 360


28
27
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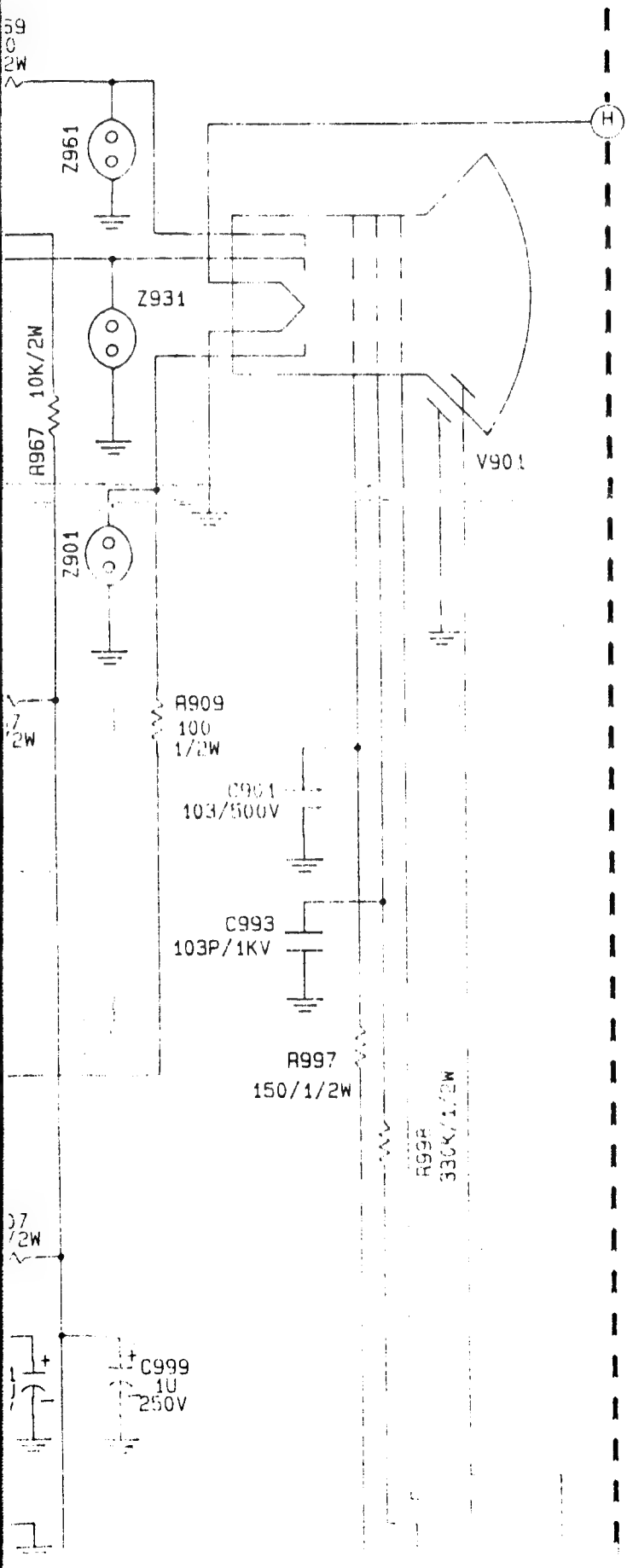
22
21
20
19
18
17
16
15
R564 100
C563 33P
R565 200
R566 390
C505 680U/25V
R534 100
C533 33P
R536 390
R504 100
C503 33P
R505 200
R589 12K
C564 0.1
R588 1.5K
R506 390
)3 (LM1203)
R568 560
R569 560
Q962 2SC3611
R567 22
C570 3.3U/100V
Q961 2SC1906
R961 6.8
C962 390P
R962 51
R538 560
R539 560
Q932 2SC3611
R537 22
C540 3.3U/100V
Q931 2SC1906
R931 6.8
C932 330P
R932 51
R508 560
R509 560
Q902 2SC3611
R507 22
C510 3.3U/100V
Q901 2SC1906
R901 6.8
C902 390P
R902 51
L961 2.2U
R963 680/2W
R964 560/2W
R968 100
R969 100 1/2W
R970 10K
D962 30V
C963 1U/100V
Z961
Z93
L931 2.2U
R933 680/2W
R934 560/2W
R938 100
R940 10K
D932 30V
C93 1U/100V
R937 10K/2W
R939 100 1/2W
R967 10K/2W
Z901
L901 2.2U
R903 680/2W
R904 560/2W
R908 100
R910 10K
D902 30V
C903 1U/100V
R907 10K/2W
C991 10U 100V
C992 470U/25V

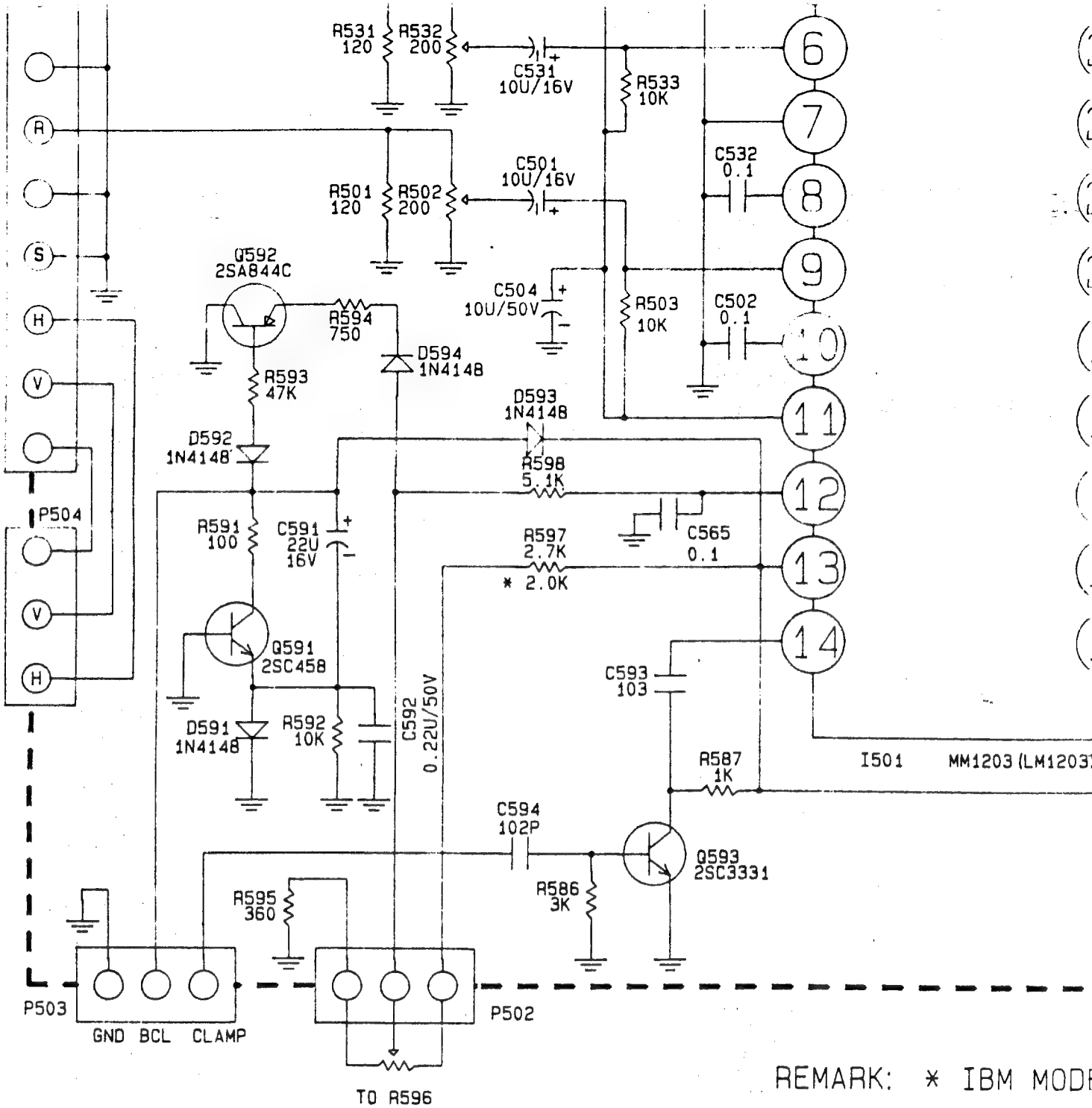
REVSION HISTORY

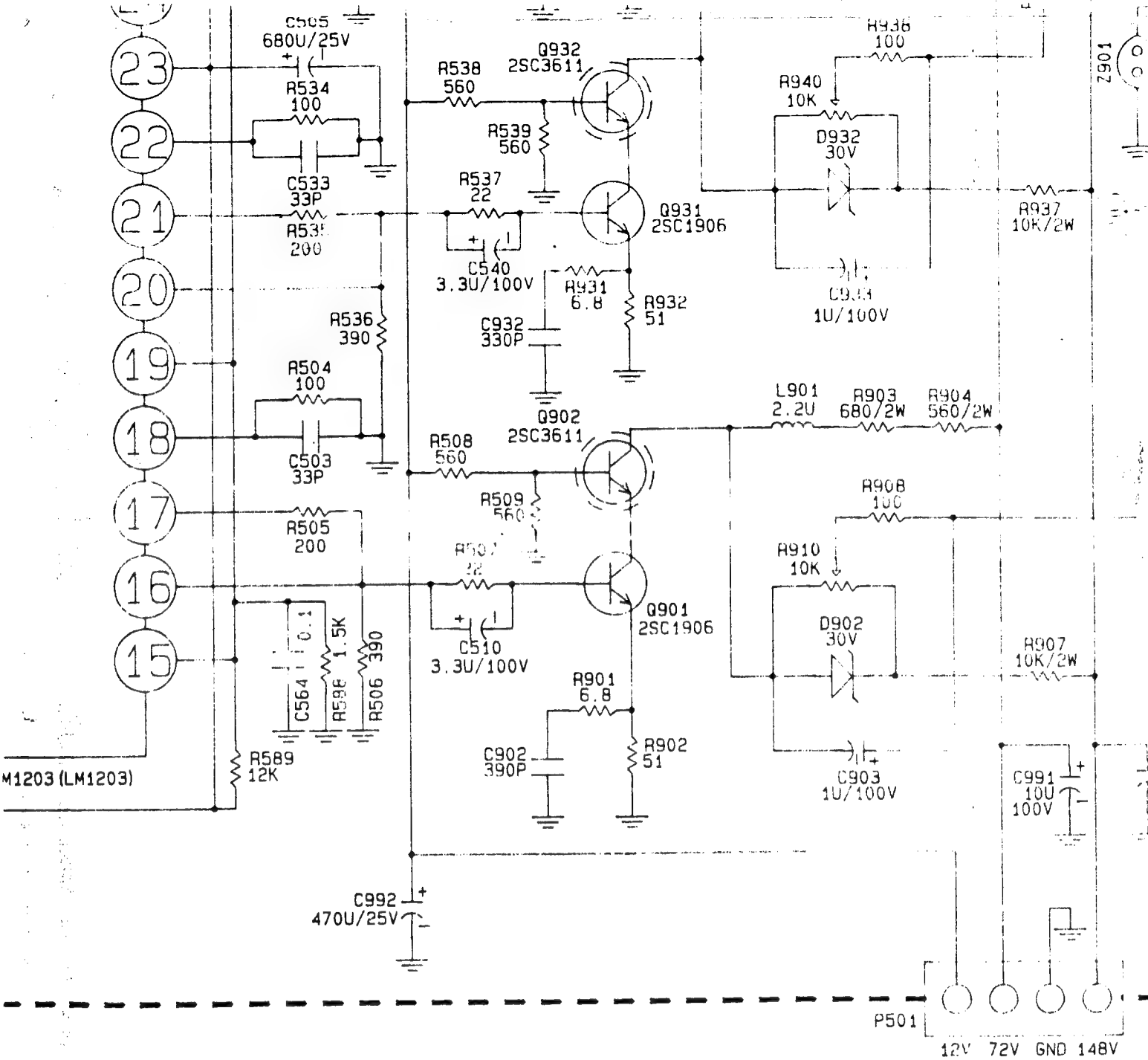
REV: 01 DATE: 01/19'94

ECN NO.: 9000002270

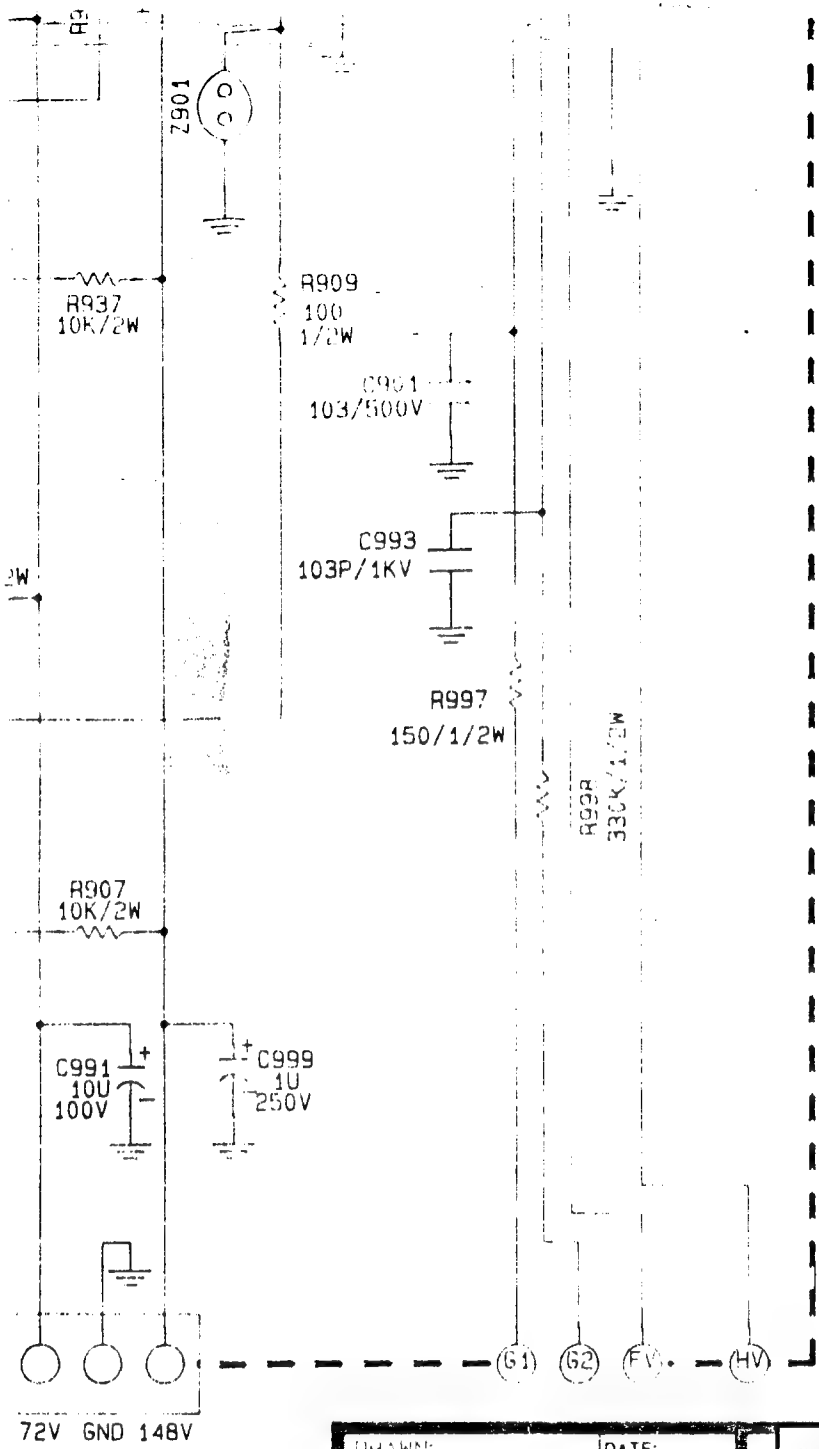
12/23/93




R531 120
R532 200
C531 10U/16V
R533 10K
C532 0.1
R501 120
R502 200
C501 10U/16V
C504 10U/50V
R503 10K
C502 0.1
Q592 2SA844C
R594 750
D594 1N4148
R593 47K
D593 1N4148
D592 1N4148
R598 5.1K
P504
R591 100
C591 22U 16V
R597 2.7K
* 2.0K
C565 0.1
Q591 2SC458
C593 103
D591 1N4148
R592 10K
C592 0.22U/50V
R587 1K
I501
MM1203 (LM1203
C594 102P
Q593 2SC3331
R595 360
R586 3K
P503
GND BCL CLAMP
P502
TO R596
REMARK: * IBM MODE



IBM MODELS ONLY



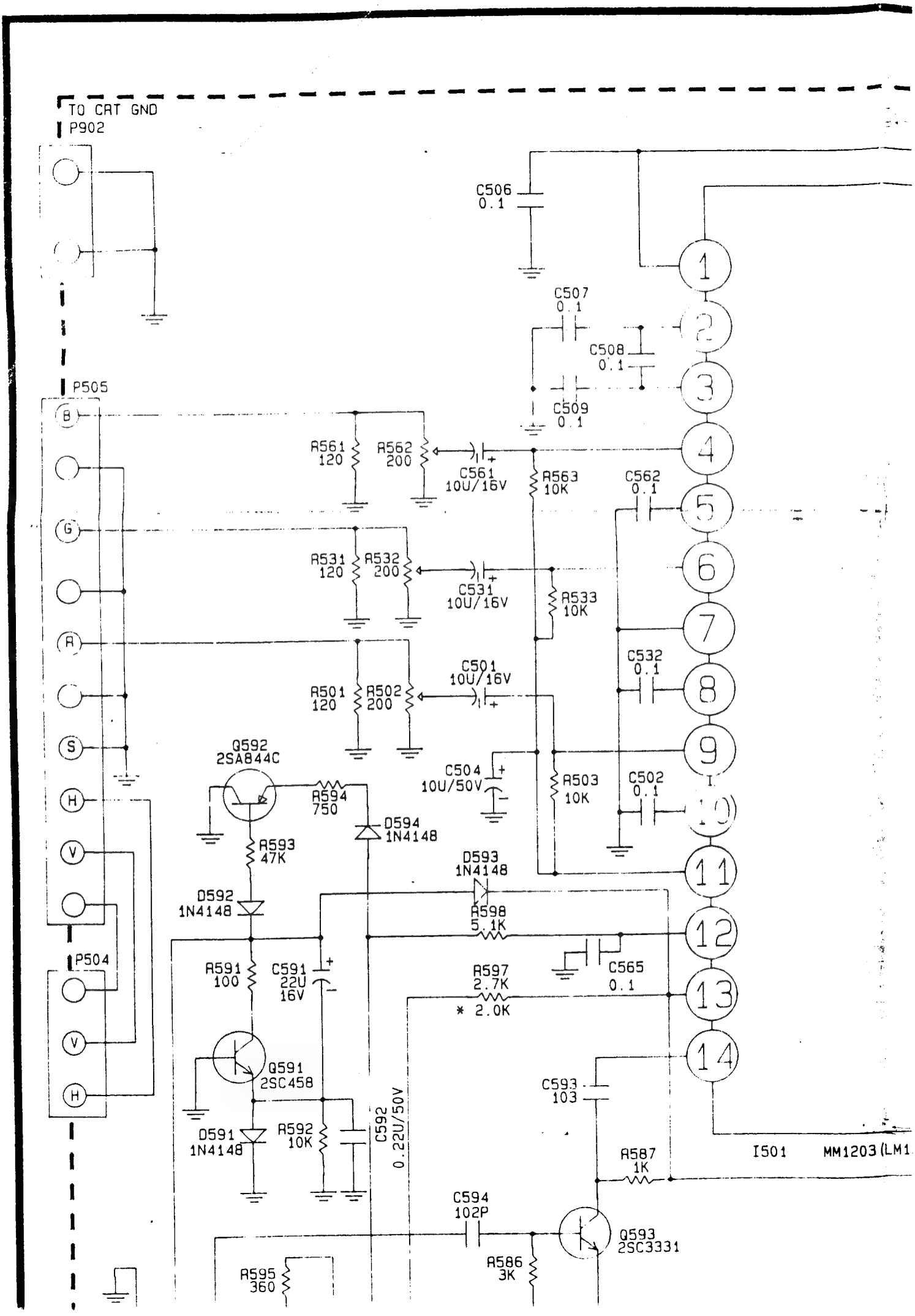
DRAWN:	DATE: 01/19'94
CHK:	DATE:
APPRO:	DATE:
DESIGN:	DATE:
CHECK:	DATE:
APPROVAL:	DATE:

TAXAN

Ergovision 400/410 Video Board Circuit

Dwg No: 8912010000 Rev 2

PCB No: 6831120100


TO CAT GND
P902
P505
P504
C506
0.1
C507
0.1
C508
0.1
C509
0.1
R561
120
R562
200
C561
10U/16V
R563
10K
C562
0.1
R531
120
R532
200
C531
10U/16V
R533
10K
R501
120
R502
200
C501
10U/16V
C532
0.1
Q592
2SA844C
R594
750
C504
10U/50V
R503
10K
C502
0.1
D594
1N4148
R593
47K
D593
1N4148
D592
1N4148
R598
5.1K
R591
100
C591
22U
16V
R597
2.7K
* 2.0K
C565
0.1
Q591
2SC458
C593
103
D591
1N4148
R592
10K
C592
0.22U/50V
R587
1K
I501
MM1203(LM1
C594
102P
Q593
2SC3331
R595
360
R586
3K
1
2
3
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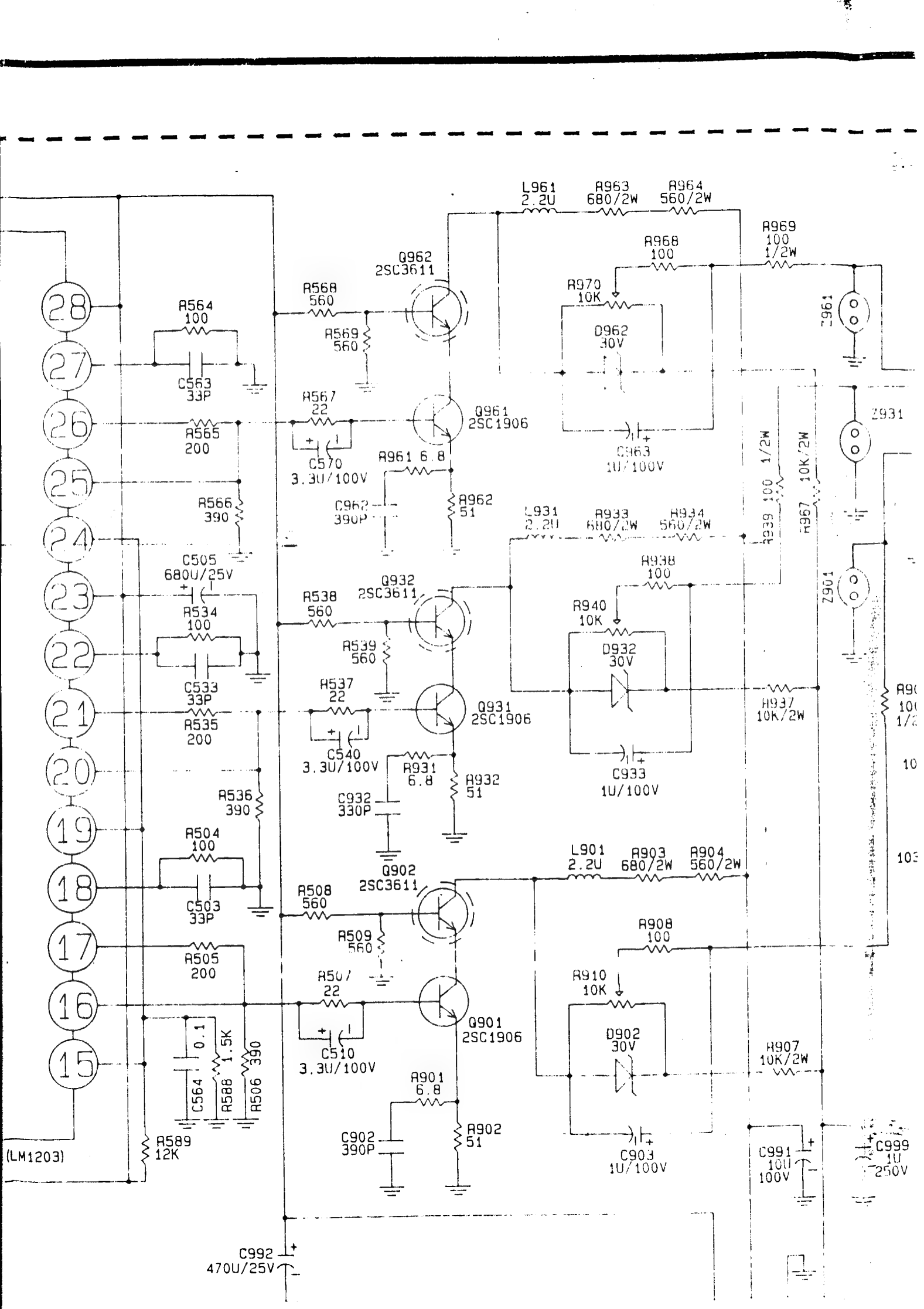
11
12
13
14
B
G
R
S
H
V
V
H


28
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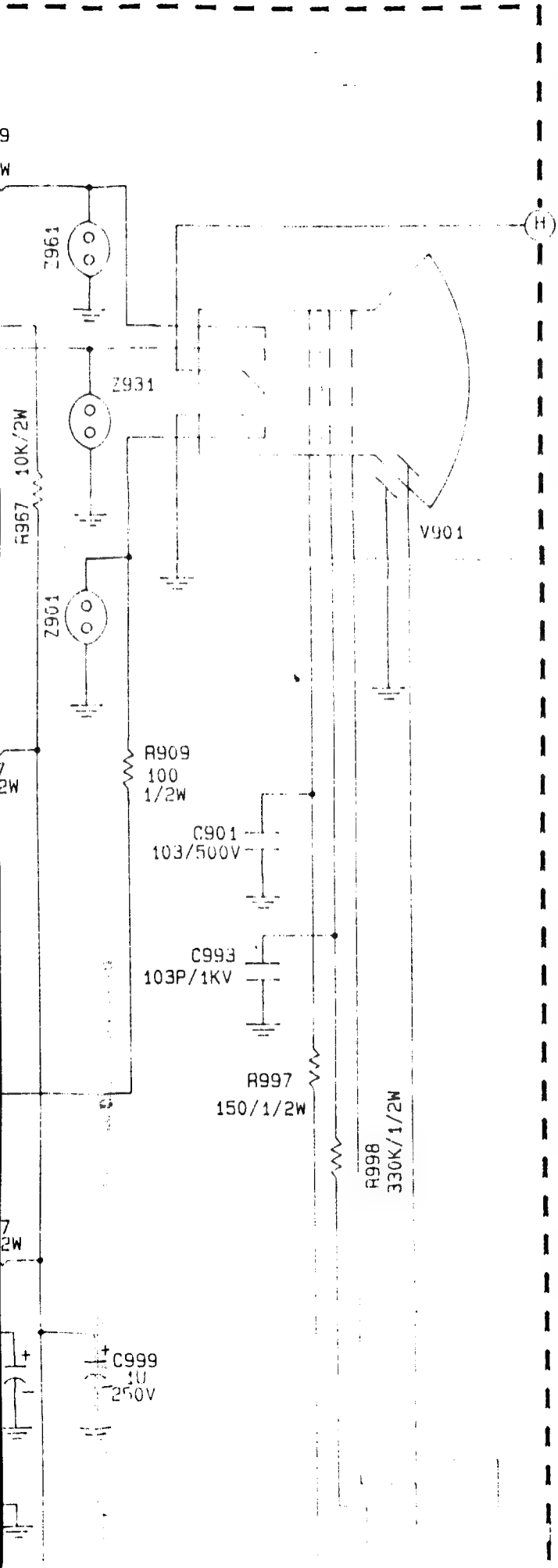
24
23
22
21
20
19
18
17
16
15
(LM1203)
R564 100
C563 33P
R565 200
R566 390
C505 680U/25V
R534 100
C533 33P
R535 200
R536 390
R504 100
C503 33P
R505 200
C564 0.1
R588 1.5K
R506 390
R589 12K
R568 560
R569 560
Q962 2SC3611
R567 22
C570 3.3U/100V
Q961 2SC1906
R961 6.8
C962 390P
R962 51
R538 560
R539 560
Q932 2SC3611
R537 22
C540 3.3U/100V
Q931 2SC1906
R931 6.8
C932 330P
R932 51
R508 560
R509 560
Q902 2SC3611
R507 22
C510 3.3U/100V
Q901 2SC1906
R901 6.8
C902 390P
R902 51
L961 2.2U
R963 680/2W
R964 560/2W
R968 100
R969 100 1/2W
R970 10K
D962 30V
C963 1U/100V
Z961
Z931
R939 100 1/2W
R967 10K/2W
L931 2.2U
R933 680/2W
R934 560/2W
R938 100
R940 10K
D932 30V
R937 10K/2W
C933 1U/100V
Z901
L901 2.2U
R903 680/2W
R904 560/2W
R908 100
R910 10K
D902 30V
R907 10K/2W
C903 1U/100V
C991 100U 100V
C999 1U 250V
C992 470U/25V

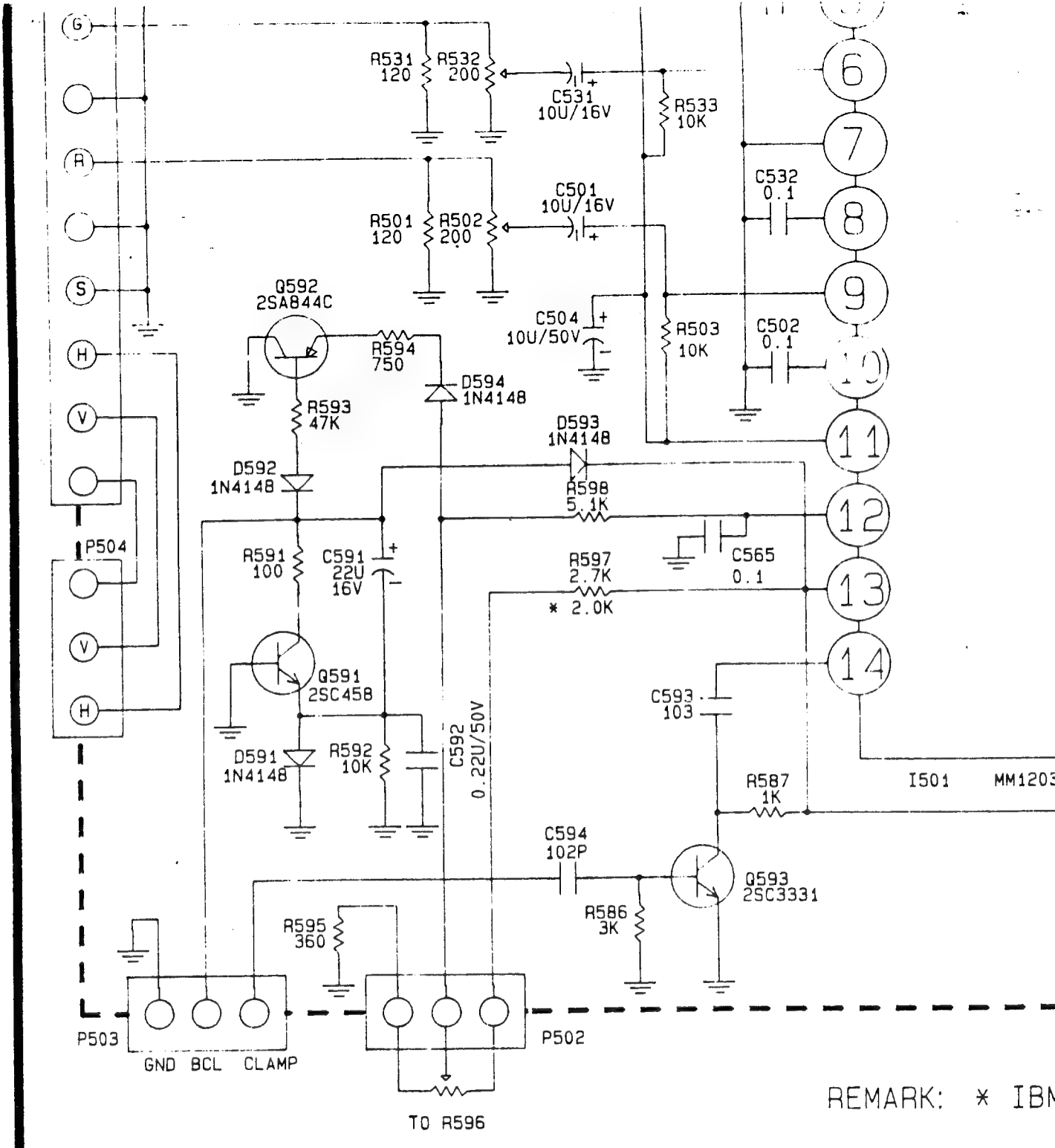


REVSION HISTORY

REV: 01 DATE: 01/19'94

ECN NO.: 9000002270

12/23/93


G
R
S
H
V
V
H
P504
R531 120
R532 200
C531 10U/16V
R533 10K
R501 120
R502 200
C501 10U/16V
C532 0.1
C504 10U/50V
R503 10K
C502 0.1
Q592 2SA844C
R594 750
D594 1N4148
R593 47K
D593 1N4148
D592 1N4148
R598 5.1K
R591 100
C591 22U 16V
R597 2.7K
* 2.0K
C565 0.1
Q591 2SC458
C593 103
D591 1N4148
R592 10K
C592 0.22U/50V
R587 1K
I501
MM1203
C594 102P
Q593 2SC3331
R586 3K
R595 360
P503
GND BCL CLAMP
P502
TO R596
6
7
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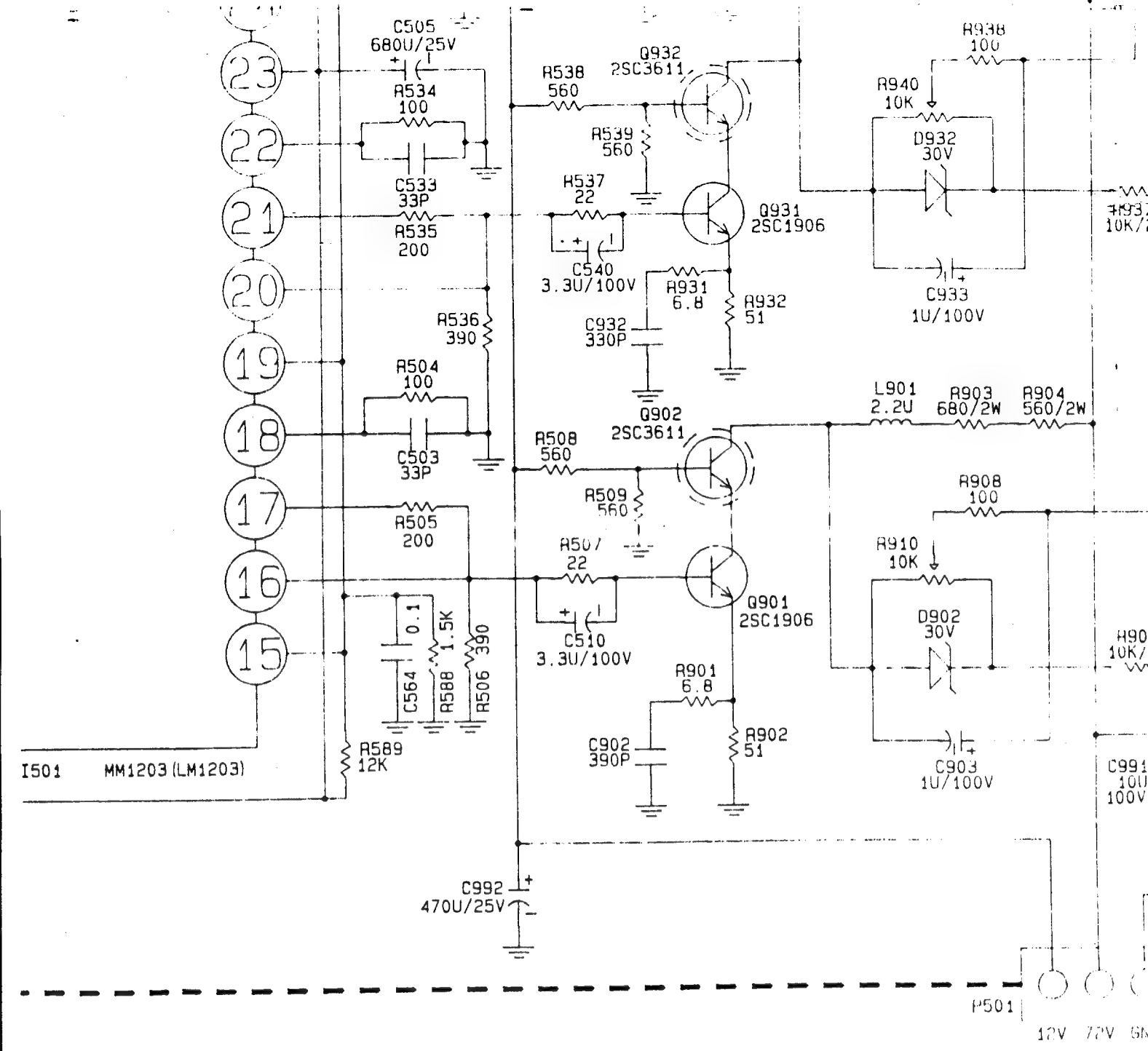
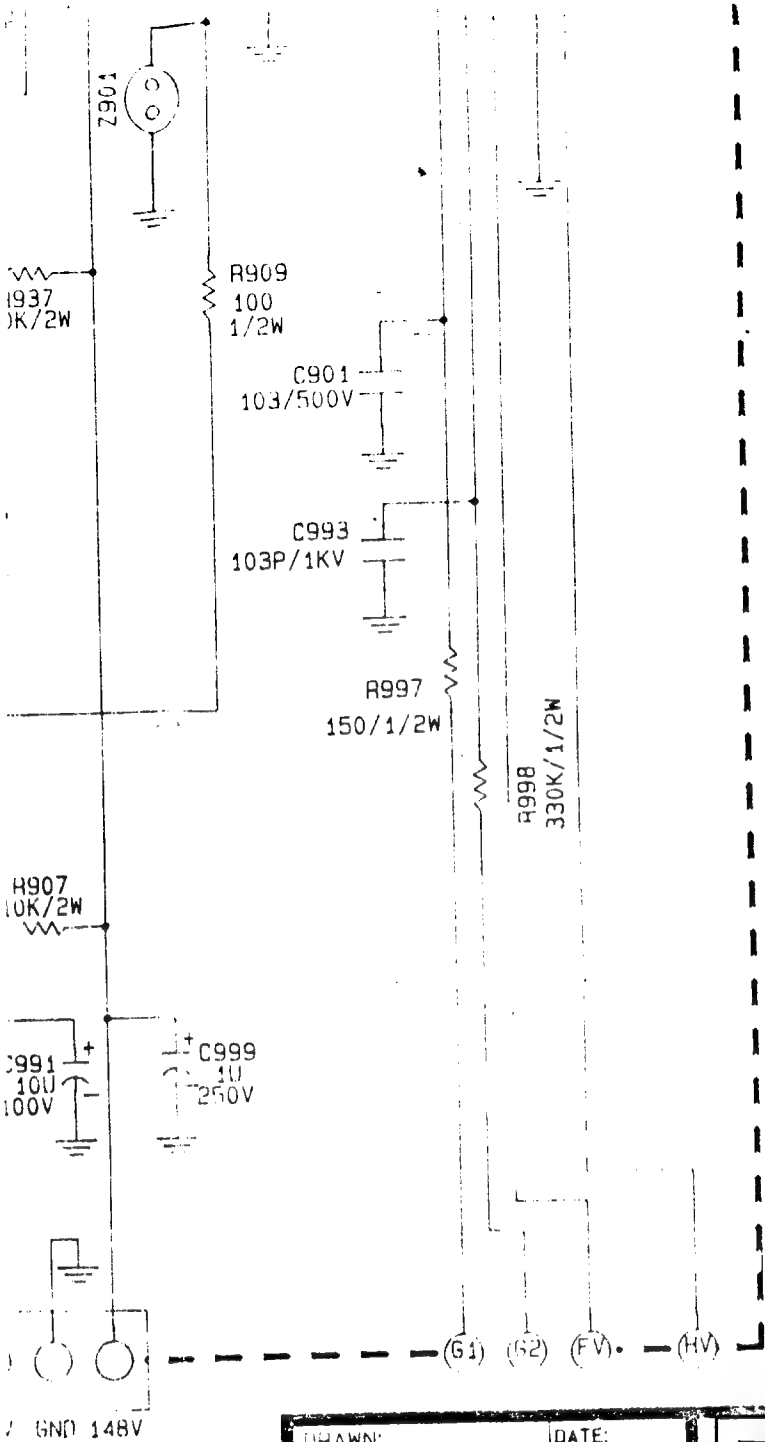
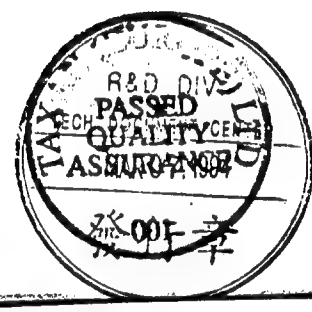
9
10
11
12
13
14

REMARK: * IBM



*: * IBM MODELS ONLY





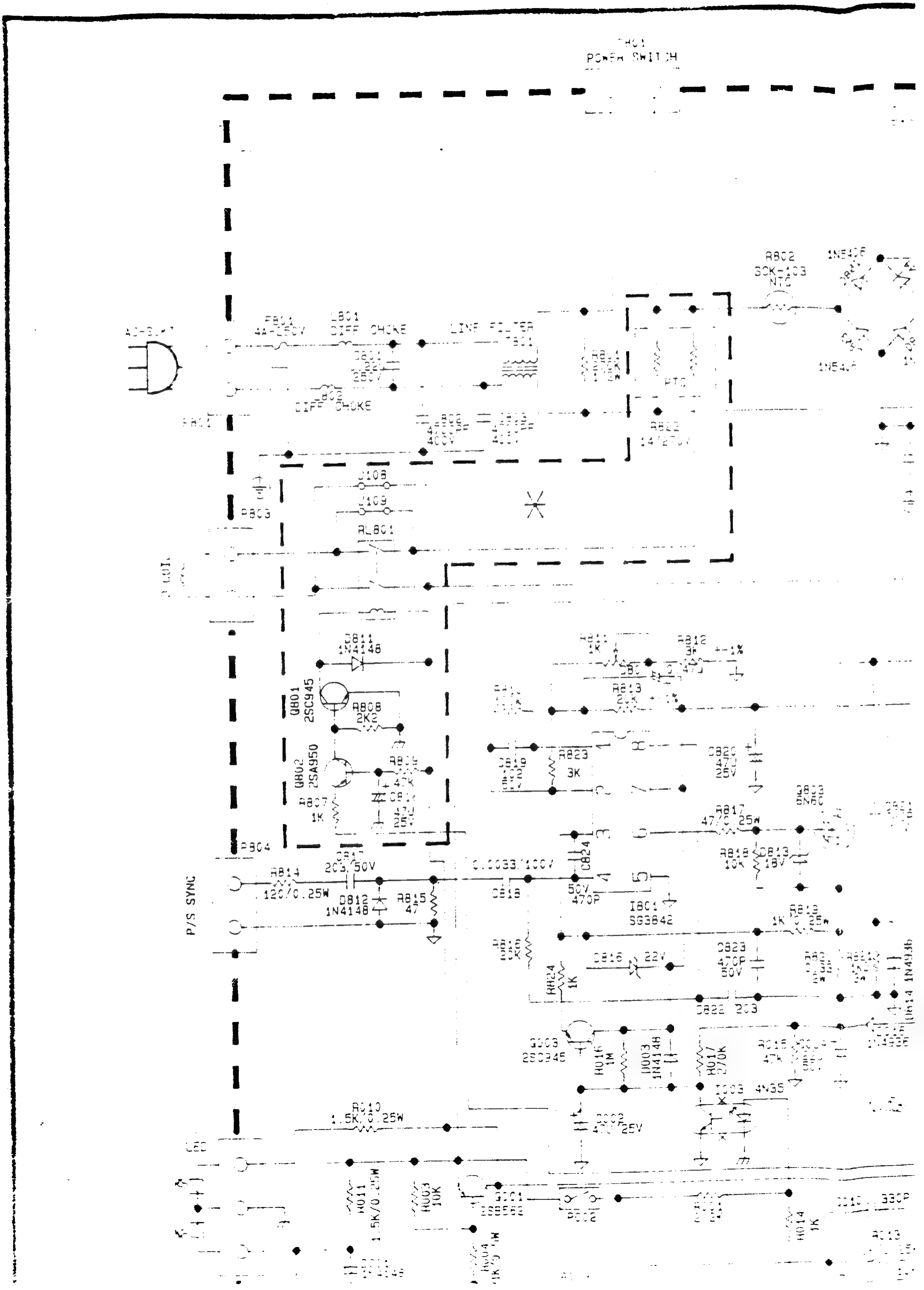
DRAWN:	DATE: 01/19'94
CHK:	DATE:
APPRO.:	DATE: 1/27/94
DESIGN:	DATE:
CHECK:	DATE: 1/27/94
APPROVAL:	DATE: 1/27/94

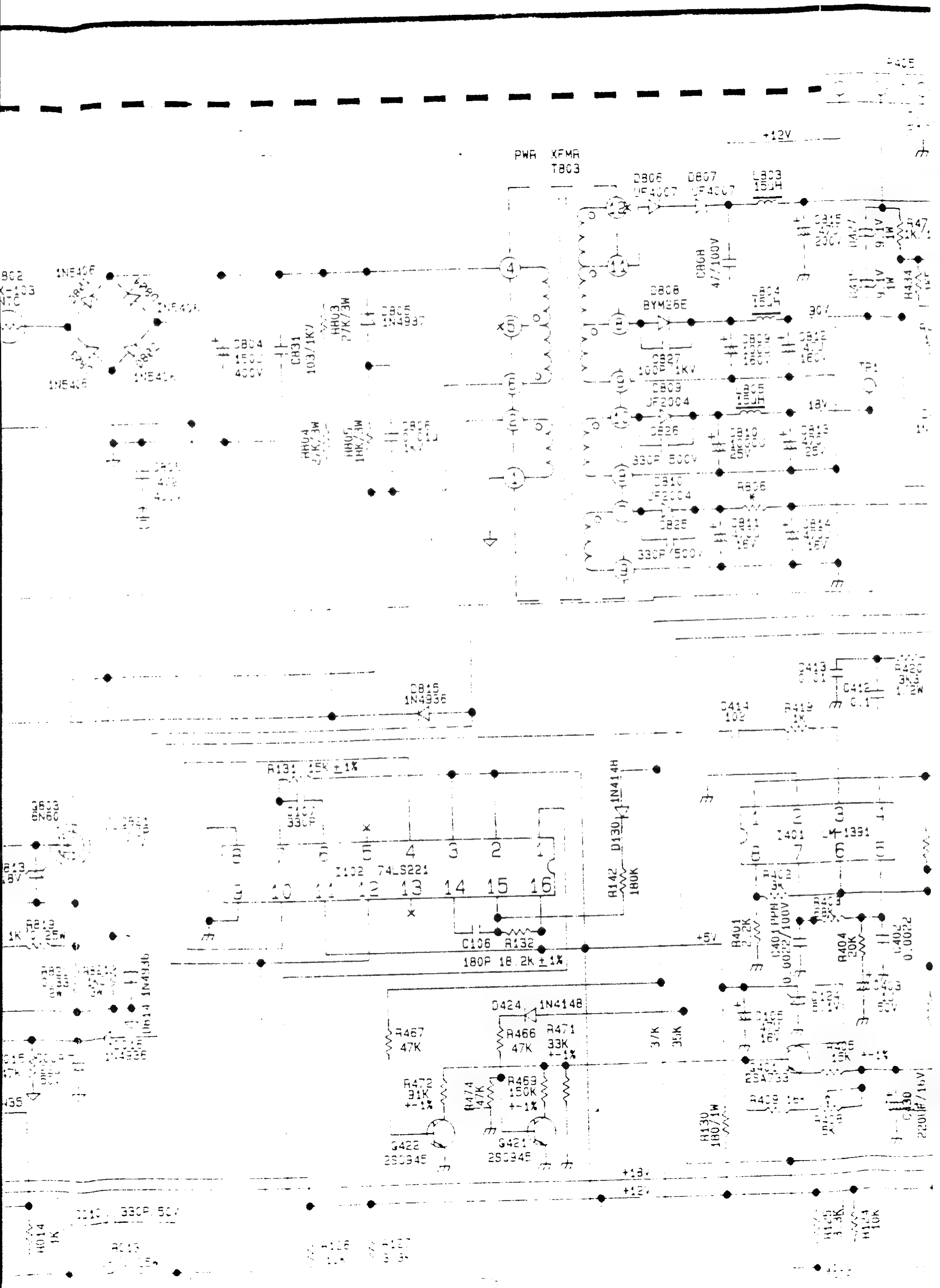
TAXAN

Ergovision 400/410 Video Board Circuit

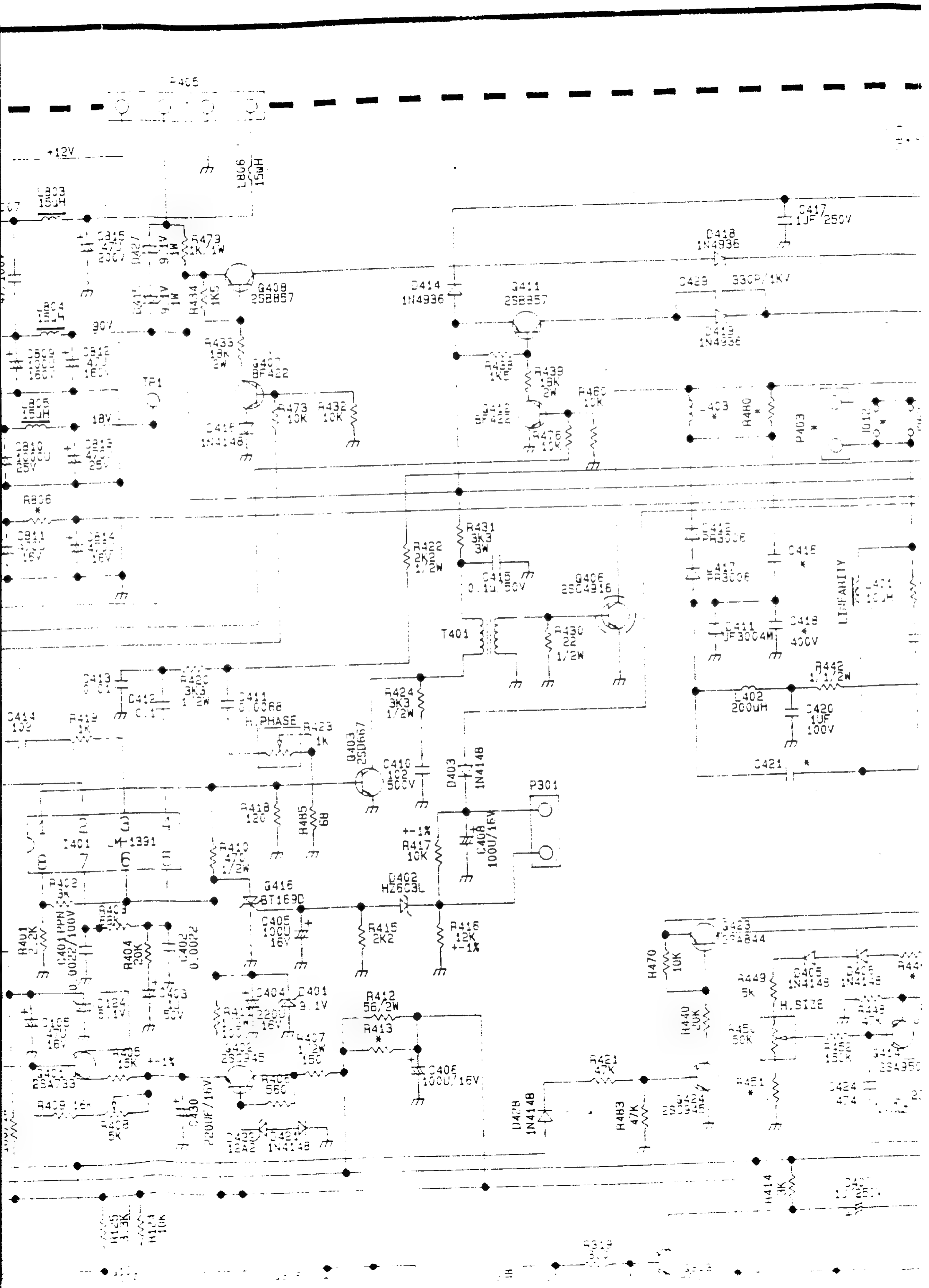
Dwg No: 8912010000 Rev 2

PCB No: 6831120100

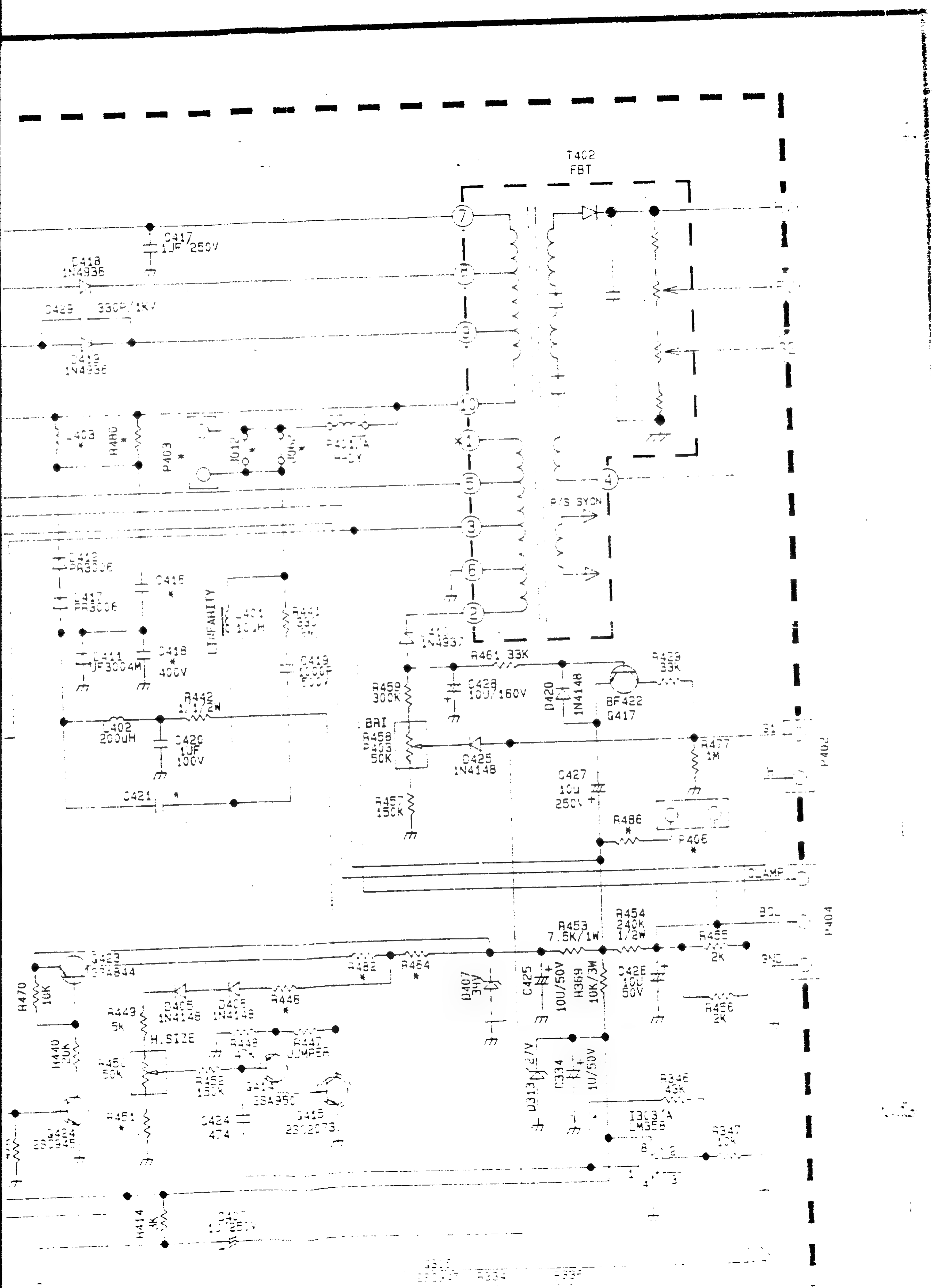

POWER SWITCH
R802
SCK-103
NTC
1N5406
L801
DIFF CHOKE
LINE FILTER
L802
DIFF CHOKE
PTC
R822
J108
J109
RL801
P801
P803
P804
D811
1N4148
Q801
2SC945
R808
2K2
Q802
2SA950
R809
47K
R807
1K
P/S SYNC
R814
120/0.25W
203/50V
D812
1N4148
R815
47
0.0033/100V
C818
C824
50V
470P
IC801
SG3842
R811
1K
R812
R813
R823
3K
C819
C820
470
25V
Q803
8N60
R817
47/0.25W
R818
10K
D813
18V
R819
1K/0.25W
C823
470P
50V
D816
22V
R824
1K
C822 203
D814 1N4936
Q003
2SC945
R016
1M
D003
1N4148
R017
270K
R015
47K
IC03 4N35
C003
47U/25V
R010
1.5K/0.25W
LED
R011
1.5K/0.25W
R003
10K
Q001
2SB562
P002
R014
1K
C010 330P
R013



PWR XFMR
T803
+12V
D806 UF4007
D807 UF4007
L803 15UH
D808 BYM26E
C808 47/100V
L804
90V
C804 1500 400V
C831 103/1KV
RR03 27K/3W
D805 1N4937
RR04 27K/3W
RR05 1MK/3W
C827 100P 1KV
D809 UF2004
L805
18V
C826 330P 500V
D810 UF2004
R806
C825 330P/500V
1N5406
TP1
D815 1N4936
C413
C412 0.1
C414 102
R419 1K
R420
R131 15K ±1%
C107 330P
I102 74LS221
1N4148 D130
R142 180K
I401
C106 R132
180P 18.2K ±1%
+5V
R401 2.2K
C401 PPN 0.0022/100V
R404 20K
C402 0.0022
D424 1N4148
R467 47K
R466 47K
R471 33K +-1%
R472 91K +-1%
R474 47K
R469 150K +-1%
Q422 2SC945
Q421 2SC945
R130 180/1W
R405 15K +-1%
2SA733
R409
C430 220UF/16V
+18V
+12V
R014 1K
330P 50V
Q803 8N60
D814 1N4936
R125 3.3K
R124 10K



P405
+12V
L806 15uH
L803 15UH
C815 47U 200V
R479 1K/1W
Q408 2SB857
H434 1K5
L804
90V
C809 1000U 160V
C812 47U 160V
R433 18K 2W
Q407 BF422
TP1
L805
18V
R473 10K
R432 10K
D416 1N4148
C810 2000U 25V
C813 470U 25V
R806
C811
C814
16V
C417 1UF 250V
D418 1N4936
D414 1N4936
Q411 2SB857
C429 330P/1KV
D419 1N4936
R438 1K5
R439 18K 2W
Q412 BF422
R476 10K
R460 10K
L403
R480
P403
J012
R431 3K3 3W
R422 2K2 1/2W
C415 0.1U/50V
Q406 2SC4916
T401
R430 22 1/2W
C422 PR3006
C416
C417 PR3006
C411 UF3004M
C418 400V
LINEARITY
R442 1/2W
L402 200uH
C420 1UF 100V
C421
C413 0.01
C412 0.1
R420 3K3 1/2W
C411 0.0068
R424 3K3 1/2W
C414 102
R419 1K
H.PHASE
R423 1K
Q403 2SD667
C410 102 500V
D403 1N4148
P301
R418 120
R485 68
IC401 LM1391
R410 470 1/2W
+-1%
R417 10K
C408 100U/16V
R402 3K
Q416 BT169D
D402 HZ6C3L
R401 2.2K
C401 PPN 0.0022/100V
R404 20K
C402 0.0022
C405 100U 16V
R415 2K2
R416 12K +-1%
Q423 2SA844
R470 10K
R449 5K
D405 1N4148
D406 1N4148
H.SIZE
C403 50V
C404 220U 16V
D401 9.1V
R412 56/2W
R413
C406 100U/16V
R440 20K
R450 50K
R452 150K
2SA950
Q401 2SA733
R405 15K
Q402 2SC945
R406 560
R407 1/2W 150
R421 47K
Q424 2SC945
R451
C424 474
R409
R408 5K
C430 220UF/16V
D422 12A2
D421 1N4148
D428 1N4148
R483 47K
R414 3K
R125 3.3K
R124 10K
R319

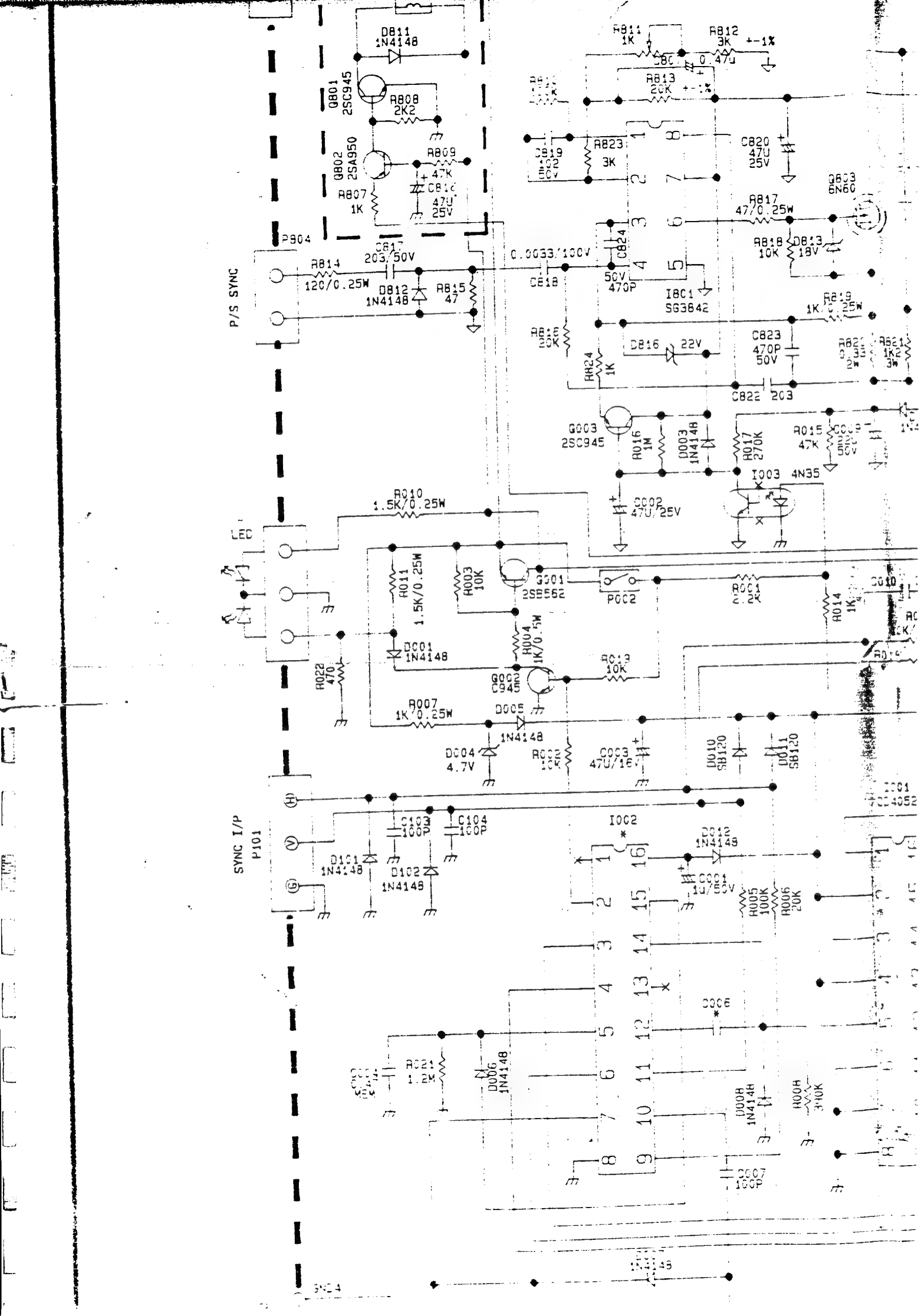


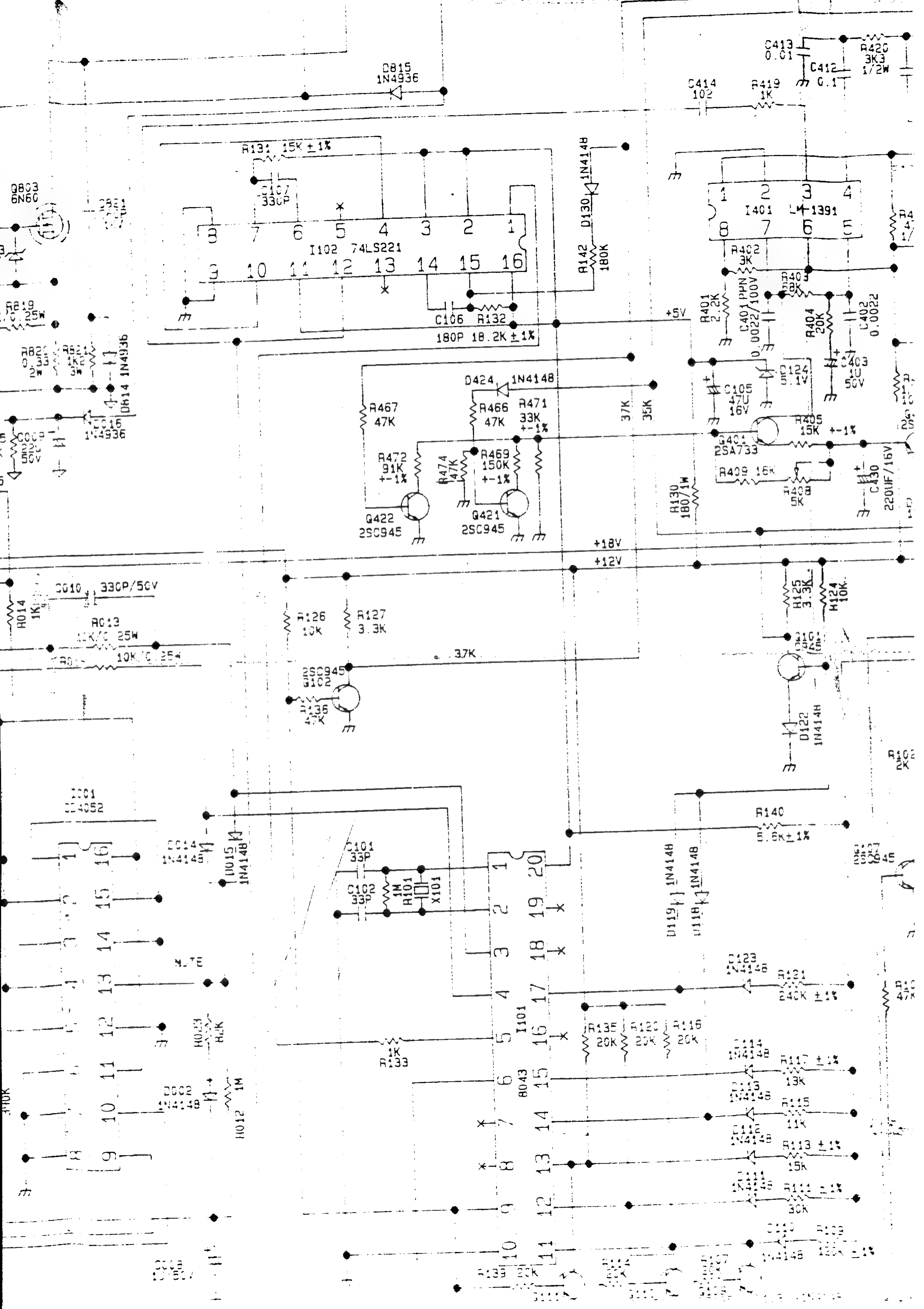
T402
FBT
C417
1UF 250V
D418
1N4936
330P/1KV
1N4936
R480
P403
P/S SYCN
LINEARITY
R442
L402
200uH
C420
1UF
100V
C421
R461 33K
C428
R459
300K
BRI
R458
P403
50K
D425
1N4148
R457
150K
D420
1N4148
BF422
Q417
R477
1M
C427
R486
P406
CLAMP
P402
R453
7.5K/1W
R454
240K
1/2W
R455
2K
R456
2K
P404
GND
Q423
R470
10K
R482
R464
D407
C425
10U/50V
R369
10K/3W
10U
50V
D405
1N4148
R446
R449
5K
H.SIZE
R447
JUMPER
R440
R452
2SA950
R451
C424
474
Q415
C334
10U/50V
R346
43K
LM358
R347
R414
3K

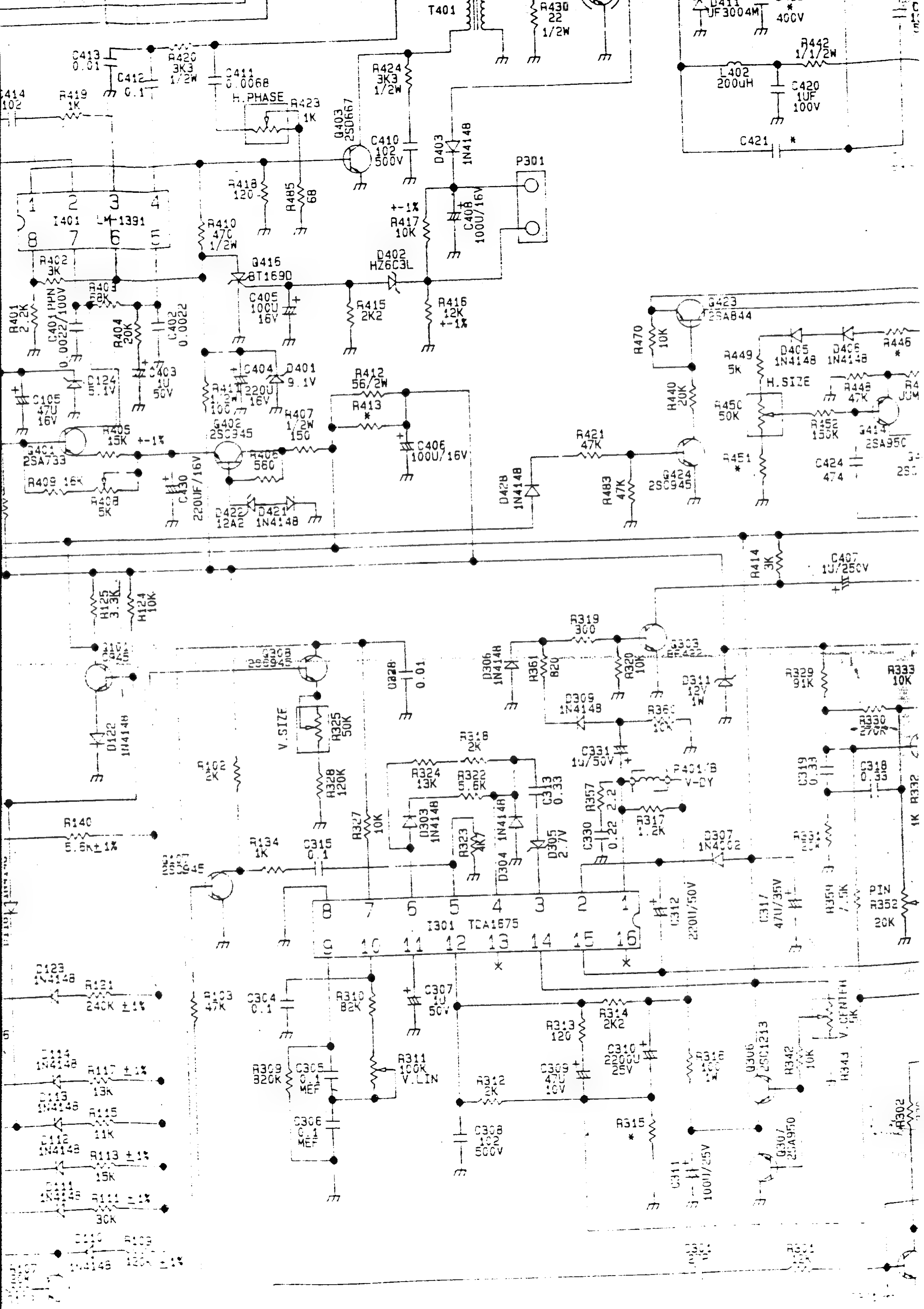
REVISION HISTORY

REV.: 01 DATE : 01/25'94

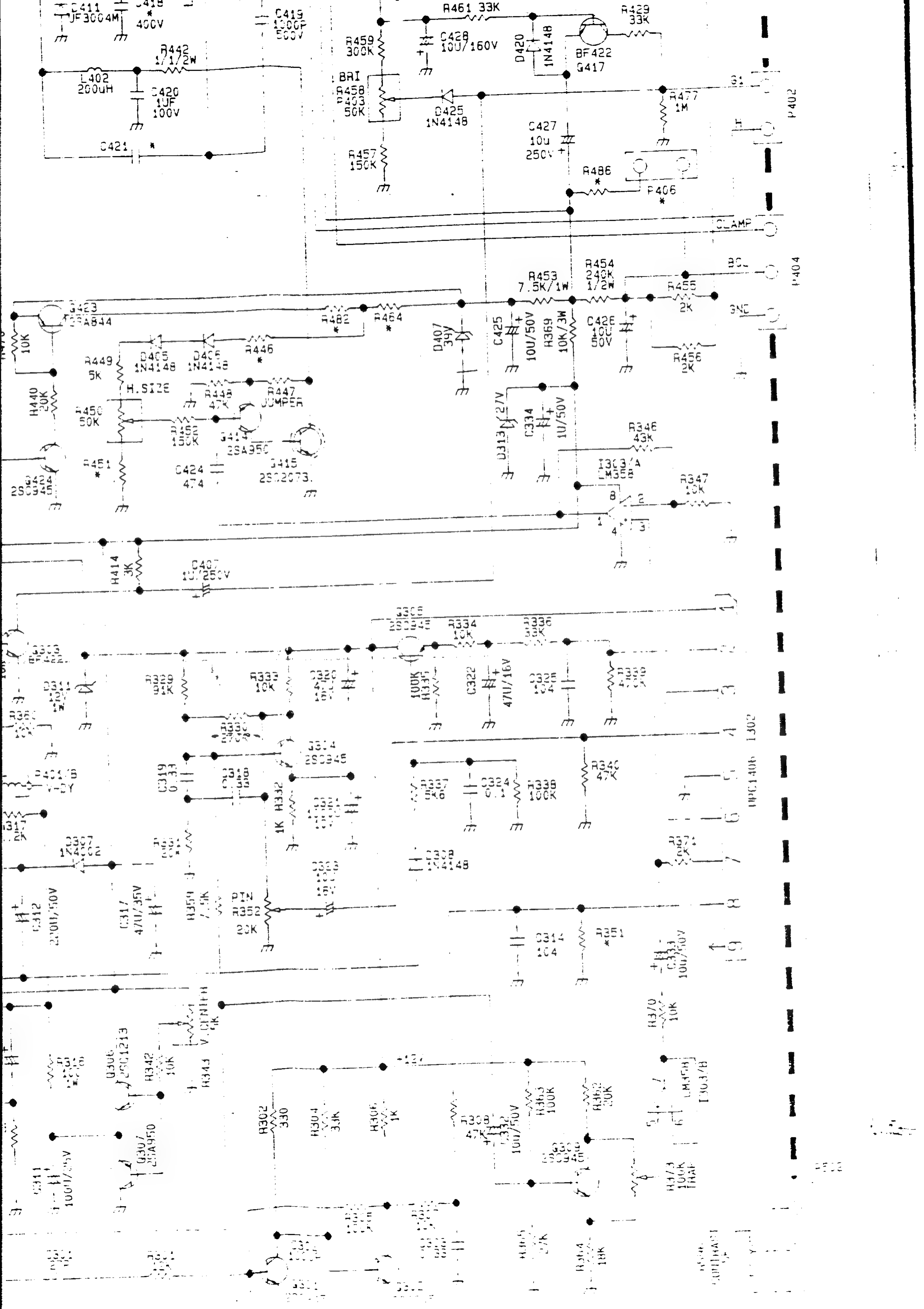
ECN NO :	9000002197	11/24'93
ECN NO :	9000002203	11/26'93
ECN NO :	9000002211	11/29'93
ECN NO :	9000002219	12/03'93
ECN NO :	9000002240	12/13'93
ECN NO :	9000002249	12/16'93
ECN NO :	9000002260	12/22'93
ECN NO :	9000002270	12/28'93
ECN NO :	9000002281	01/05'94
ECN NO :	9000002289	01/11'94
ECN NO :	9000002323	01/25'94

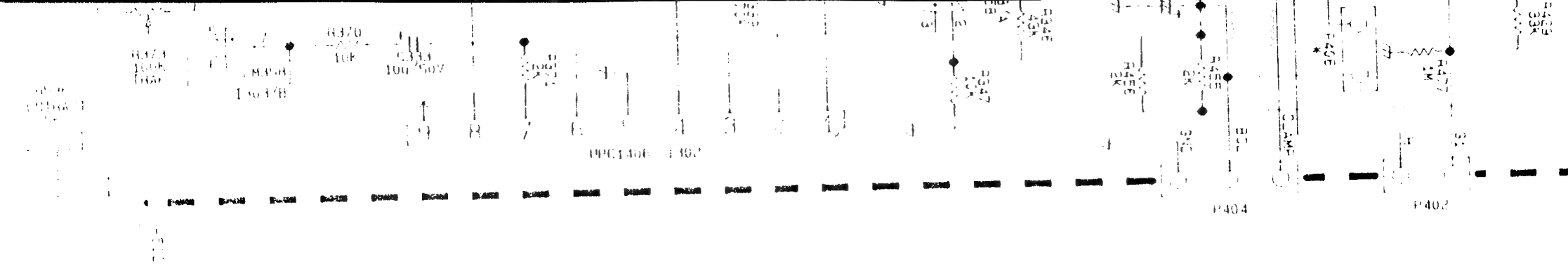

P/S SYNC
P804
LED
SYNC I/P
P101
D811 1N4148
Q801 2SC945
R808 2K2
Q802 2SA950
R809
C810 47U 25V
R807 1K
C817 203/50V
R814 120/0.25W
D812 1N4148
R815 47
C818 0.0033/100V
C824 50V 470P
R811 1K
R812 3K +-1%
C811 0.47U
R813 20K +-1%
C819 102 50V
R823 3K
C820 47U 25V
Q803 8N60
R817 47/0.25W
R818 10K
D813 18V
I801 SG3842
R819 1K/0.25W
R816 20K
R824 1K
D816 22V
C823 470P 50V
C822 203
Q003 2SC945
R016 1M
D003 1N4148
R017 270K
R015 47K
I003 4N35
C002 47U/25V
R010 1.5K/0.25W
R011 1.5K/0.25W
R003 10K
Q001 2SB562
P002
R001 2.2K
R014 1K
R004 1K/0.5W
D001 1N4148
R022 470
R013 10K
Q002 C945
R007 1K/0.25W
D005 1N4148
D004 4.7V
R002 10K
C003 47U/16V
D010 SB120
D011 SB120
C103 100P
C104 100P
D101 1N4148
D102 1N4148
I002
D012 1N4148
C001 1U/50V
R005 100K
R006 20K
D006
R021 1.2K
D006 1N4148
D008 1N4148
R008 390K
C007 100P
GND

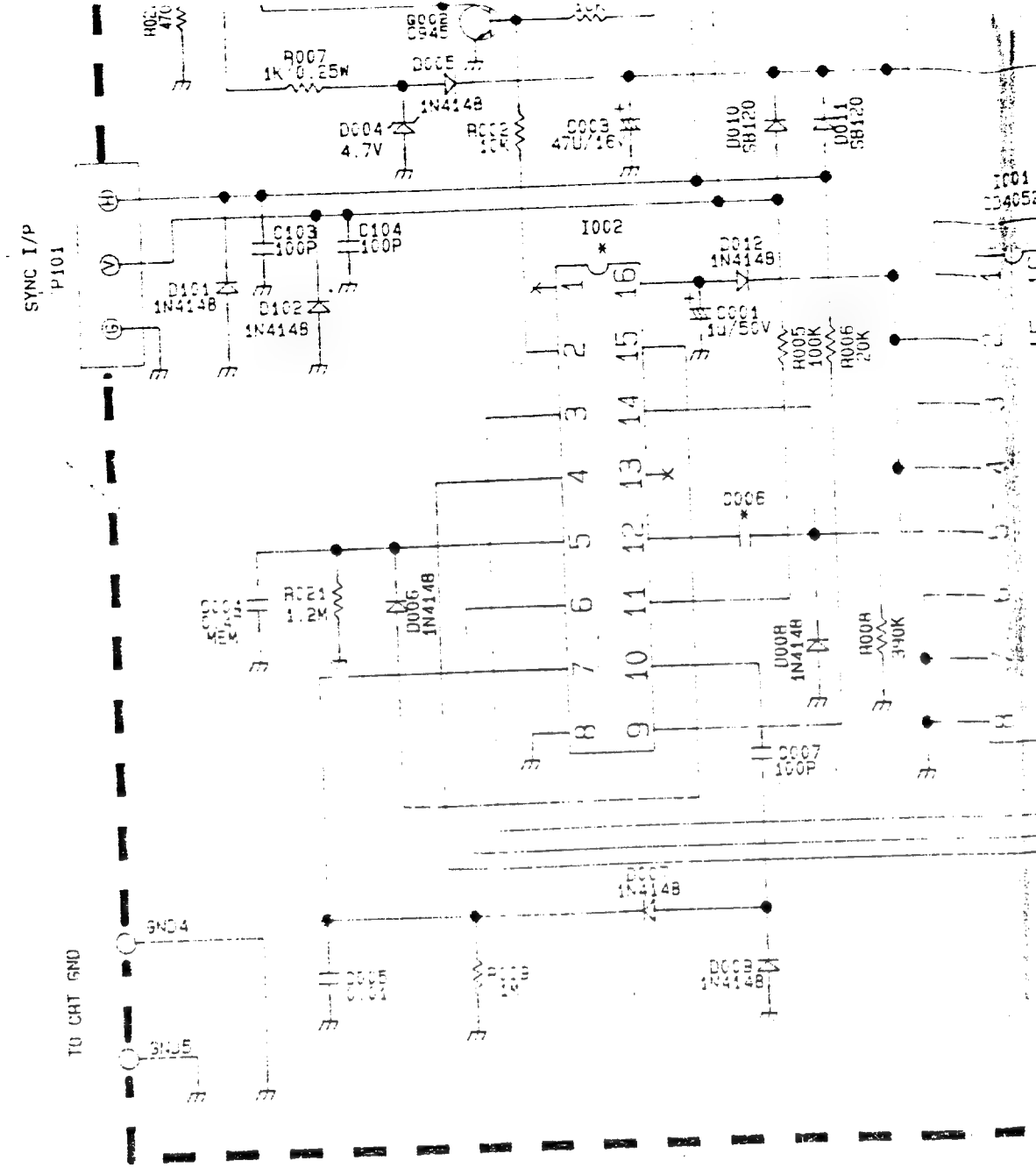

D815
1N4936
C413
0.01
C412
0.1
R420
3K3
1/2W
C414
102
R419
1K
R131 15K ±1%
C107
330P
Q803
6N60
D130 1N4148
R142
180K
I102 74LS221
I401 LM1391
R402
3K
R403
18K
R401
2.2K
C401 PPN
0.0022/100V
R404
20K
C402
0.0022
C106 R132
180P 18.2K ±1%
+5V
R819
R821
R822
D814 1N4936
D816
1N4936
C105
47U
16V
D124
5.1V
C403
1U
50V
D424 1N4148
R467
47K
R466
47K
R471
33K
+-1%
37K
35K
Q401
2SA733
R405
15K +-1%
R472
91K
+-1%
R474
47K
R469
150K
+-1%
R409 16K
R408
5K
C430
220UF/16V
R130
180/1W
Q422
2SC945
Q421
2SC945
+18V
+12V
C010 330P/50V
R014
1K
R013
10K/0.25W
10K/0.25W
R126
10K
R127
3.3K
R125
3.3K
R124
10K
37K
2SC945
Q102
R136
47K
D122
1N4148
R102
2K
I001
CD4052
C101
33P
C102
33P
R101
1M
X101
R140
5.6K ±1%
D014
1N4148
D015
1N4148
D119 1N4148
D118 1N4148
MUTE
I101
8043
D123
1N4148
R121
240K ±1%
R135
20K
R120
20K
R116
20K
R133
1K
D114
1N4148
R117 ±1%
13K
D113
1N4148
R115
11K
D112
1N4148
R113 ±1%
15K
D111
1N4148
R111 ±1%
30K
D002
1N4148
R012
1M
R139 20K
1N4148
R109
120K ±1%



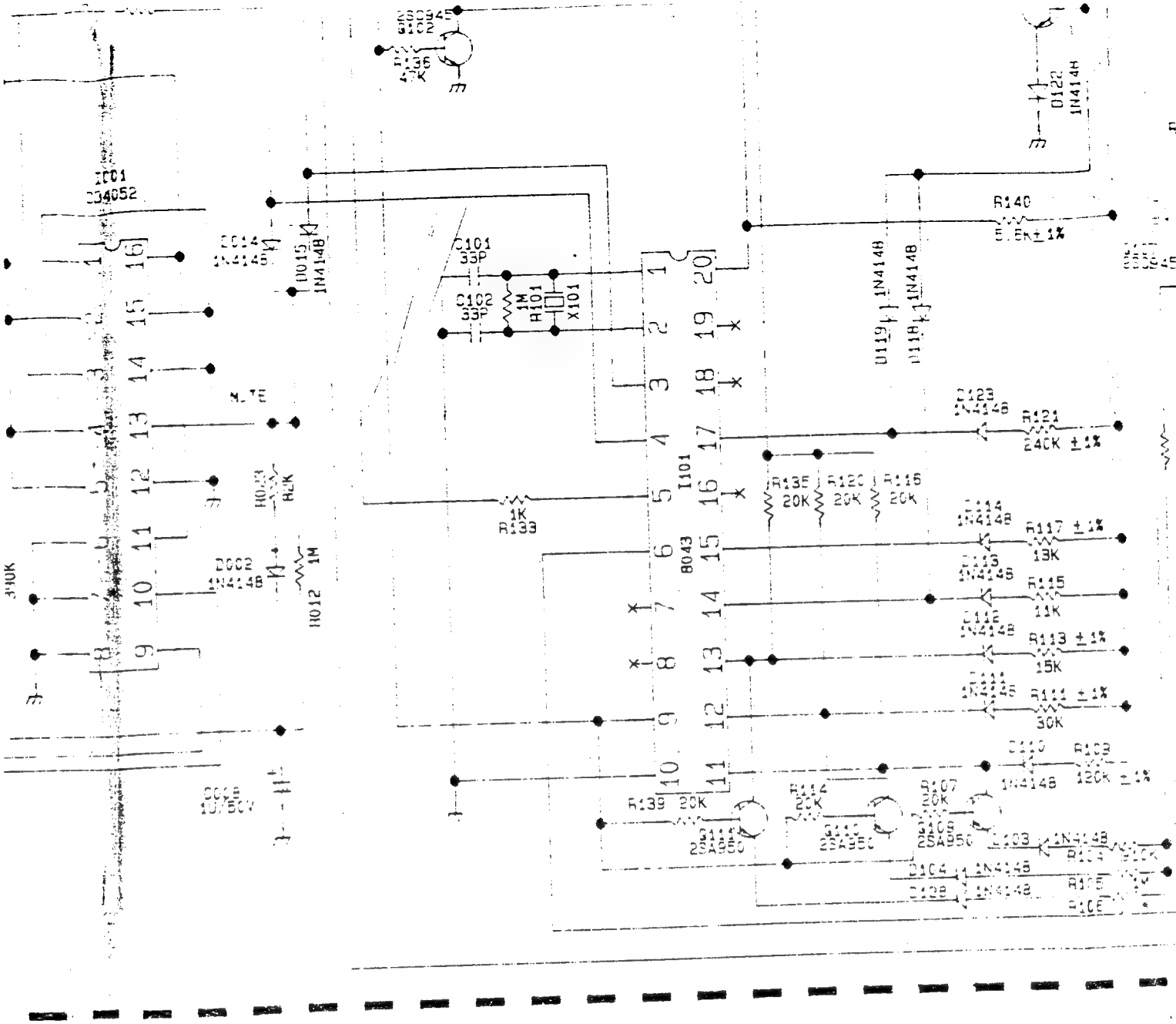
T401
R430 22 1/2W
D411 UF3004M
400V
R442 1/1/2W
L402 200uH
C420 1UF 100V
C421 *
C413 0.01
C412 0.1
R420 3K3 1/2W
C411 0.0068
H.PHASE
R423 1K
R424 3K3 1/2W
Q403 2SD667
C410 102 500V
D403 1N4148
P301
C414 102
R419 1K
R418 120
R485 68
I401 LM1391
R410 470 1/2W
R417 10K
C408 100U/16V
R402 3K
Q416 BT169D
D402 HZ6C3L
R416 12K +-1%
R403 82K
C405 100U 16V
R415 2K2
R401 2.2K
C401 PHN 0.0022/100V
R404 20K
C402 0.0022
C403 1U 50V
C404 220U 16V
D401 9.1V
R412 56/2W
R413 *
R407 1/2W 150
C124 5.1V
C105 47U 16V
R405 15K +-1%
Q402 2SC945
C406 100U/16V
Q401 2SA733
R406 560
R409 15K
R408 5K
C430 220UF/16V
D422 12A2
D421 1N4148
Q423 2SA844
R470 10K
R449 5K
D405 1N4148
D406 1N4148
R446 *
H.SIZE
R448 47K
R450 50K
R452 150K
Q414 2SA950
R440 20K
R421 47K
D428 1N4148
R483 47K
Q424 2SC945
R451 *
C424 474
R414 3K
C407 1U/250V
R125 3.3K
R124 10K
R319 300
Q303 BF422
Q308 2SC945
C328 0.01
D306 1N4148
R361 820
R320 10K
D311 12V 1W
R329 91K
R333 10K
V.SIZE
R325 50K
D309 1N4148
R360 10K
R330 270K
D122 1N4148
R318 2K
C331 10/50V
R401/B V-DY
R102 2K
R324 13K
R322 5.6K
C313 0.33
R357 2.2
C319 0.33
C318 0.33
R328 120K
D303 1N4148
R317 1.2K
R332 1K
R140 5.6K±1%
R327 10K
R323 4K7
1N4148
D305 2.7V
C330 0.22
D307 1N4002
R134 1K
C315 0.1
D304
2SC945
I301 TDA1675
C312 220U/50V
C317 470/35V
R359 7.5K
PIN R352 20K
D123 1N4148
R121 240K ±1%
R103 47K
C304 0.1
R310 82K
C307 10 50V
R313 120
R314 2K2
V.CENTER 1K
C310 2200U 25V
R316
Q306 2SC1213
R342 10K
R343
D114 1N4148
R117 ±1% 13K
R309 820K
C305 0.1 MEF
R311 100K V.LIN
R312 2K
C309 470 10V
D113 1N4148
R115 11K
C306 0.1 MEF
C308 102 500V
R315 *
Q307 2SA950
R302
D112 1N4148
R113 ±1% 15K
C311 100U/25V
D111 1N4148
R111 ±1% 30K
D110 1N4148
R109 120K ±1%


C411
UF3004M
400V
C419
1000P
500V
R442
1/1/2W
L402
200uH
C420
1UF
100V
C421
R461 33K
R459
300K
C428
10U/160V
D420
1N4148
BF422
Q417
R429
33K
BRI
R458
P403
50K
D425
1N4148
R477
1M
G1
P402
C427
10u
250V
R457
150K
R486
P406
CLAMP
R453
7.5K/1W
R454
240K
1/2W
BCL
P404
R455
2K
GND
Q423
2SA844
R482
R464
D407
34V
C425
10U/50V
R369
10K/3W
C426
10U
50V
R456
2K
10K
R449
5K
D405
1N4148
D406
1N4148
R446
H.SIZE
R448
47K
R447
JUMPER
R440
20K
R450
50K
R452
150K
Q414
2SA950
Q415
2SC2073
D313
27V
C334
10U/50V
R346
43K
I303/A
LM358
R347
10K
R451
C424
474
Q424
2SC945
R414
3K
C407
1U/250V
Q305
2SC945
R334
10K
R336
33K
Q303
BF422
D311
12V
1W
R329
91K
R333
10K
C322
47U/16V
C325
104
R339
470K
R330
270K
Q304
2SC945
C319
0.33
R340
47K
R337
5K6
C324
0.1
R338
100K
H332
1K
UPC1406
I302
D308
1N4148
R371
10K
D307
1N4002
C312
2200U/50V
C317
47U/35V
R352
PIN
20K
C314
104
R351
C333
10U/50V
V.CENTER
R370
10K
Q306
2SC1213
R342
10K
+12V
R302
330
R304
33K
R306
1K
R308
47K
R363
100K
R362
20K
LM358
I303/B
C311
1000U/35V
Q307
2SA950
C332
10U/50V
Q309
2SC945
R373
100K
THAF
R364
10K

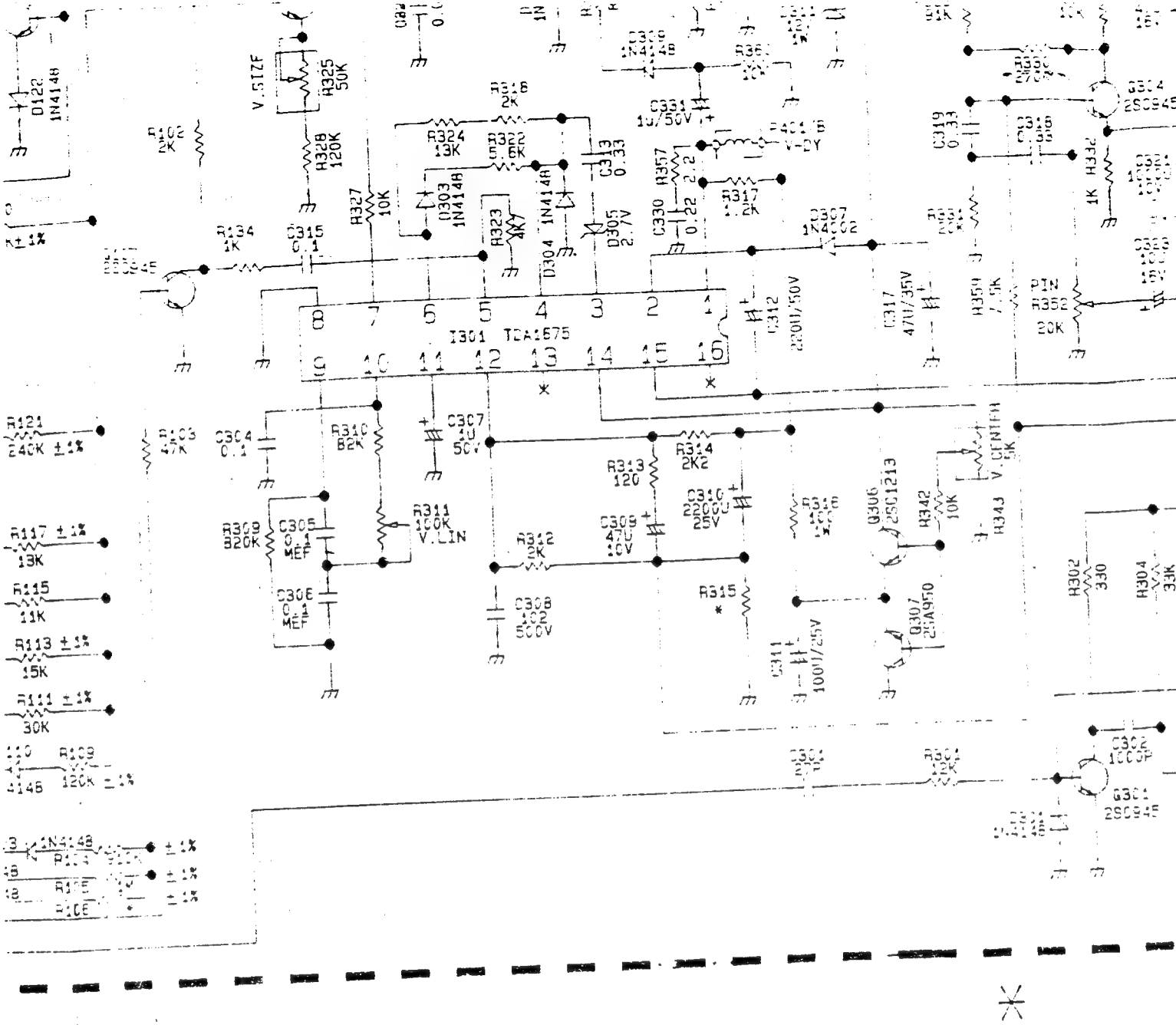

P404
P402



MODEL NAME	1438TLR			1438L
	MATSU (CC)	CPT (CA)	HIT (CB)	CPT (CO)
CRT / LOCATION	M34KNZ28CX05	M34AFA8CX18	M34KDD5GX02 (S)	GLARE M34AGC10X18
R4E4	24K	36K	24K	36K
R451	6.2K	5.1K	8.2K	5.1K
R446	6.2K	18K	6.2K	JUMPER
R447	68	68	560	68
R482	27K	39K	27K	39K
R315	1.0	1.1	1.1	1.1
R328	120K	120K	120K	120K
L403	JUMPER	3.2UH	JUMPER	3.2uH
R480	JUMPER	33/2W	JUMPER	33/2W
R351	180K	180K	120K	180K
C416	4700P	4700P	4700P	4700P
C418	0.01u	0.01u	0.01u	0.01u
C421	0.75u	0.75u	0.72u	0.75u
RB06	JUMPER	JUMPER	JUMPER	JUMPER
R413	47	47	47	47
G001	2SB562	2SB562	2SB562	2SB562
C831	103	103	103	103
C832	-	-	-	-
R106	1.58M	1.58M	1.58M	1.58M
R486	-	2.2M	-	2.2M
P406	-	6611100090	-	6611020090
P403	6614030010	-	6614030010	-

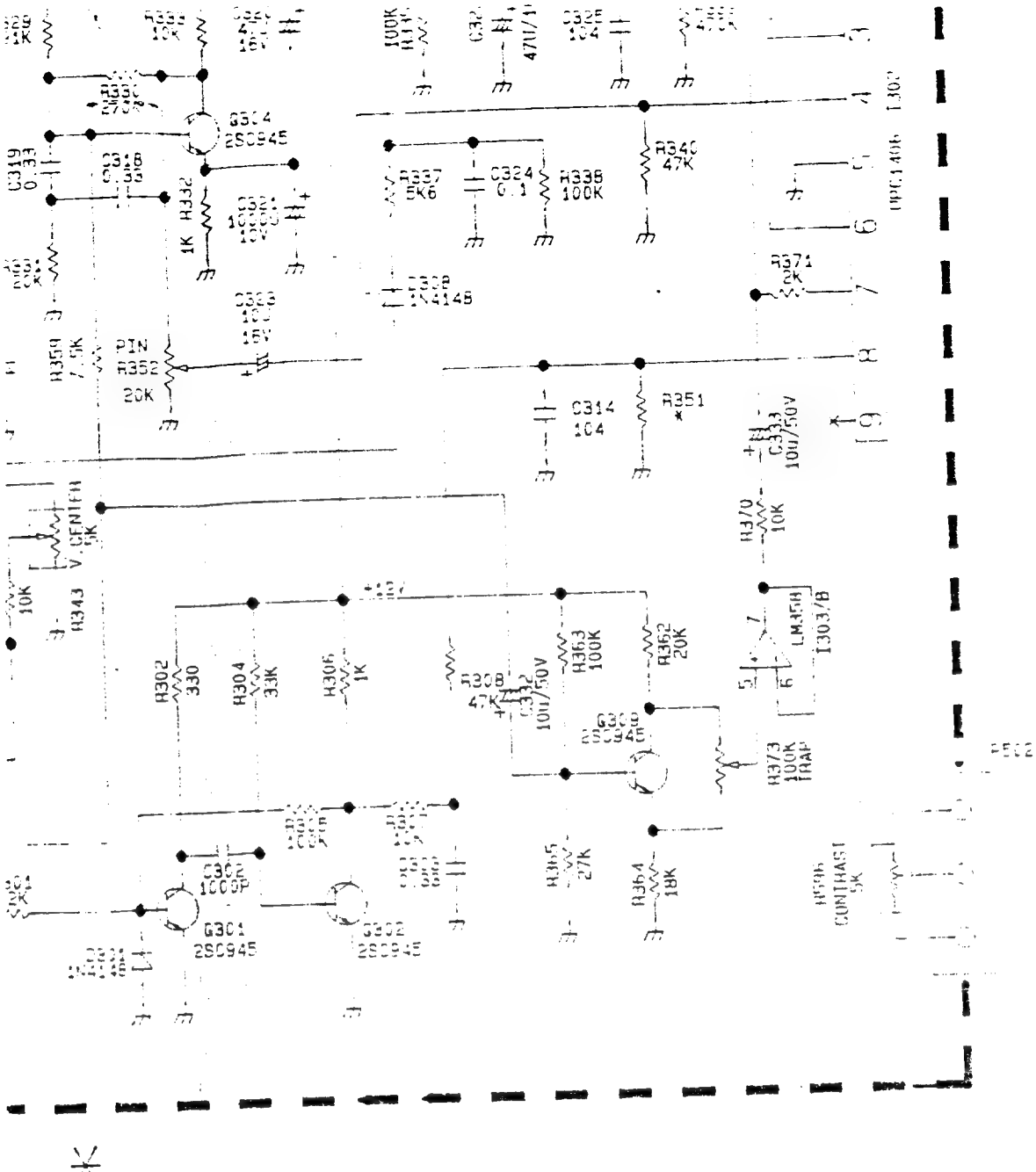


1438LB		1438T			
PT (CA)	MATSU (CO)	CPT (CA)	HIT (CB)	CPT ST (CC)	HIT ST (CD)
N SLARE AGCBCX18	M34KNZ280X05	M34AFA60X03	M34KDD50X02 (J)	M34AEP60X09	M34KDZ30X56
36K	24K	24K	24K	15K	18K
5.1K	8.2K	18K	8.2K	5.1K	18K
JUMPER	6.2K	6.2K	6.2K	JUMPER	JUMPER
68	560	560	560	68	1.2K
39K	27K	33K	27K	30K	27K
1.1	1.0	1.1	1.1	0.75	0.75
120K	120K	120K	120K	110K	110K
3.2uH	JUMPER	3.2uH	JUMPER	3.2uH	JUMPER
33/2W	JUMPER	33/2W	JUMPER	33/2W	JUMPER
180K	180K	180K	120K	180K	120K
4700P	4700P	4700P	4700P	5600P	5600P
0.01u	0.01u	0.01u	0.01u	0.012u	0.012u
0.75u	0.75u	0.75u	0.72u	0.75u	0.72u
JUMPER	JUMPER	JUMPER	JUMPER	0.33/2W	0.33/2W
47	47	47	47	56	56
2SB562	2SB562	2SB562	2SB562	2SA966	2SA966
103	103	103	103	102	102
-	-	-	-	103	103
1.58M	1.58M	1.58M	1.58M	1.5M	1.5M
2.2M	-	2.2M	-	2.2M	-
6E11020090	-	6E11020090	-	6E11020090	-
-	-	-	-	-	-



	NON GLARE	GLARE	NON GLARE	GLARE
	1438			
	CPT (CC)	CPT (CA)	HIT (CB)	HIT (CD)
	E29716B22 TC42ETHT	E29716B22 TC42ET	M34JMA30X56	M34JMA40X56
	18K	18K	18K	18K
	5.1K	5.1K	18K	18K
	JUMPER	JUMPER	JUMPER	JUMPER
	560	560	1.2K	1.2K
	27K	27K	27K	27K
	0.75	0.75	0.75	0.75
	100K	100K	100K	100K
	3.2uH	3.2uH	JUMPER	JUMPER
	33/2W	33/2W	JUMPER	JUMPER
	180K	180K	120K	120K
	5600P	5600P	5600P	5600P
	0.012u	0.012u	0.012u	0.012u
	0.75u	0.75u	0.72u	0.72u
	0.33/2W	0.33/2W	0.33/2W	0.33/2W
	56	56	56	56
	2SA966	2SA966	2SA966	2SA966
	102	102	102	102
	103	103	103	103
	1.58M	1.58M	1.58M	1.58M
	2.2M	2.2M	-	-
	6611080090	6611080090	-	-
	-	-	-	-

MODEL / LOCATION	1435TLR 1435BLR	1438T 1438
T402	6133048061	6133048060
R822	6203140017	6203140037
RLB01	6854000040	-
D811	1N4148	-
Q801	2SC945	-
Q802	2SA950	-
C816	47u/25V	-
R807	1K	-
R808	2.2K	-
R809	47K	-
T402M	7746201150	-
J108	-	JUMPER
J109	-	JUMPER



*

1438TLR 1438LR	1438T 1438
6133048061	6133048060
6203140017	6203140037
6854000040	-
1N4148	-
2SC945	-
2SA950	-
47U/25V	-
1K	-
2.2K	-
47K	-
7746201150	-
-	JUMPER
-	JUMPER

IC02 LOCATION	TC4010	CD4010
0006	82P	220P

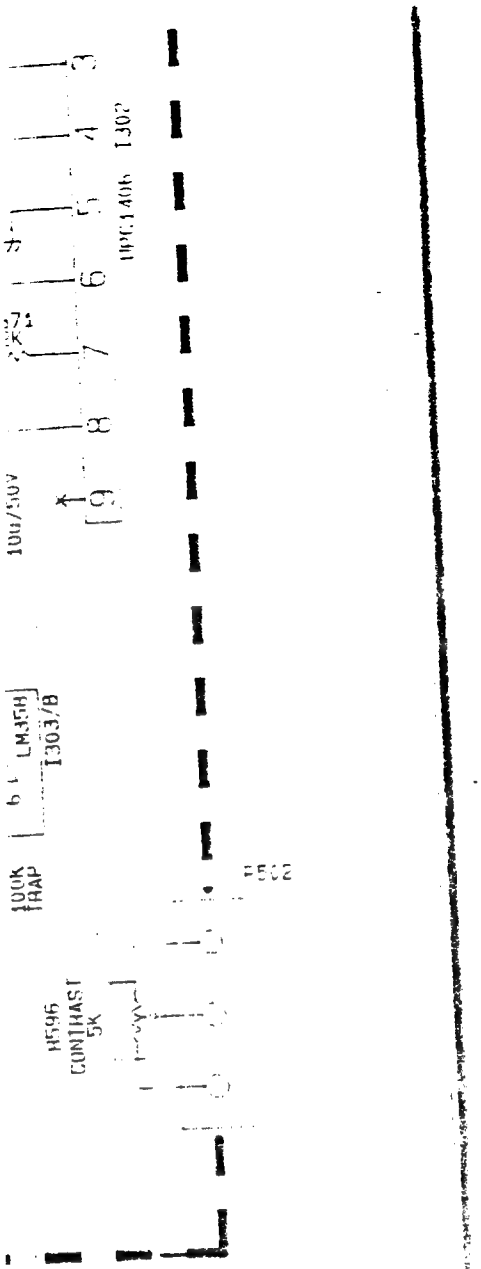
DRAWN :	DATE : 02/01'94
CHECK :	DATE :
APPRO :	DATE :
DESING :	DATE :
CHECK :	DATE :
APPRO : Jimmy	DATE : 5/7'94

TA

Model: Erge

DWG No: 891

PCB No: 683



	TAIAN
Model:	Ergovision 400LR
DWG No:	8911980001
PCB No:	6831119800
	Rev:02

TAXAN Document Control

Document Title : Ergovision 400/410 LR Service Manual	
Issue Number: 001	
Issued By: Dick Menhinick	**Date of Issue:** 21/04/94
Revisions:	

TAXAN Safety Notices

Please Note:

The following information is provided in the interests of safety.

1). This equipment is mains powered (230 Volts AC) and is therefore potentially hazardous once the cover is removed.

2). Only trained engineering staff should attempt any work on the unit with the cover removed.

3). While servicing the unit , protect the mains supply to the equipment under test and all electrically powered test equipment with a suitably rated Residual Current Circuit Breaker (rccb) unit. These devices are readily available and are designed to remove the mains supply quickly in the event of a serious leakage of current to earth.

4). Ensure all test equipment, and the unit under test is adequately earthed .

5). Always discharge the CRT before attempting any work on the high voltage power circuits.

6). We advise the use of Electrostatic Damage Prevention equipment when servicing electronic equipment containing static sensitive devices.

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SPECIFICATIONS

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Power Input	75 watts (nominal) AC rated voltage. 90V to 264V AC
Video Signals	Analog: 0.7 Vp-p, RGB positive
Synchronization Signals	Separate Sync: horizontal/vertical, TTL, positive or negative
Synchronization Frequencies	Horizontal: 30 to 38 KHz Vertical: 50/55 to 90 Hz
Signal Connectors	15-pin, D-shell connector
Display Tube	14" 90 degrees, 575R, 0.28mm dot pitch, dot type black matrix, non-glare screen
Display Area	247 x 185 mm (H x V) typical
Display Colors	Infinite
Display Characters	80 char. x 60 rows on a 10 x 10 matrix.
Maximum Resolution	1024 dots x 768 lines
Misconvergence	Center area: ≤ 0.3 mm Corner area: ≤ 0.5mm
User Controls	Power on/off, vertical size, vertical center, horizontal phase, horizontal width, contrast, brightness
Service Controls	PWB-1201: R-bias (VR910), G-bias (VR940), B-bias (VR970), R-gain (VR502), G-gain (VR532), B-gain (VR562) PWB-1198: power voltage adjust (VR811), pincushion (VR352), horizontal width (VR449), vertical size (VR321), vertical linearity (VR303), horizontal free run frequence (VR408)

Environmental Conditions	Operation: 10 to 35°C ambient Storage: 0 to 65°C ambient Humidity: 8% to 80% (non-condensing) Altitude: up to 7000 ft. above sea level
Dimensions	365 x 356 x 390 mm (H x W x D)
Gross Weight	11.9 kgs

SIGNAL CABLE PIN CONNECTIONS

Pin	Signal	Pin	Signal
1	red signal	9	NC
2	green signal	10	GND
3	blue signal	11	GND
4	GND	12	NC
5	GND	13	horizontal synchronization
6	red return	14	vertical synchronization
7	green return	15	NC
8	blue return		

SAFETY PRECAUTIONS AND NOTICES

Safety Precautions

1 Observe all cautions and safety related notes located inside the monitor cabinet and on the monitor chassis.

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Many electrical and mechanical parts in this chassis have been specially inspected for safety, and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage etc. Before replacing any of these components, read the spare parts list at the end of this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as those specified in the spare parts list may result in shock, fire, X-radiation or other hazards.

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1 When replacing parts or circuit boards, clamp the lead wires around the terminals before soldering.

2 When replacing a high wattage resistor (>1W metal oxide film resistor) in the circuit board, keep the resistor about 1 cm(1/2") away from the circuit board.

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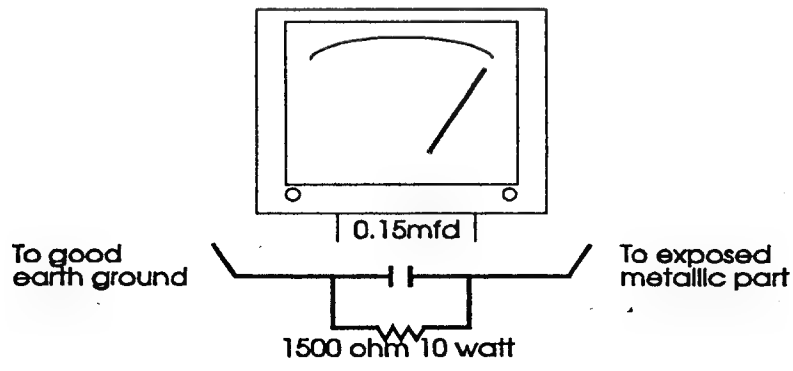
3 Reverse the AC plug at the AC outlet and repeat the steps for AC voltage measurements for each exposed metallic part.

4 Voltage measure must not exceed 0.3 volts RMS. This corresponds to 0.2 milli-amps AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



ALIGNMENT AND ADJUSTMENT

Adjustment Conditions

Power supply: Apply AC115V

Warm-up time: The monitor should be powered on for at least 15 minutes before any adjustments are made, except for convergence, which 30 minutes are required.

Signal input:

1. Video — RGB Analog, 0.7Vp-p, positive
2. Synchronization — Horizontal and vertical separate, positive or negative
3. All adjustments should be made using a signal of FH=31.468 KHz, unless otherwise defined.

Adjustment Equipment

- Volt-ohm-A meter (Sanwa FD-750C or equivalent)
- 30KV high voltage probe (HP34111A)
- Oscilloscope (TEK2235 or equivalent)
- Minolta Color Analyzer II
- Signal generator (IBM PC with proper display cards or Chroma 2000)
- Screwdriver

Switching Power Supply - Regulator Adjustment

The regulated B+ control has been pre-set in the factory and needs no adjustment. However, if any repairs are made on the power supply section, the following readjustment procedures are recommended.

1 Allow the monitor to warm-up for about 15 minutes.

2 Apply the VGA (31.468KHz) signal to the monitor.

3 Connect a DC meter to **D809** cathode end (on the main PCB), and adjust **VR811** for 18.6+/- 0.1V DC.

4 If a fuse is broken during adjustment, remember to replace it with the exact same type of fuse.

Alignment Procedures

A Synchronization Adjustment

Input signal:

1 Short pin 1 and 2 of **P002** to override the power saving function with a jumper switch.

2 Connect the probe to **D410 anode** and adjust **VR408** to obtain the horizontal frequency to 30.6 KHz +/- 100 Hz.

3 Remove the jumper switch on **P002**, pin 1 and 2.

B Picture Size Adjustment

Input Signal: Cross Hatch Pattern

Set horizontal width at 247mm on 640x480 mode / 60Hz by adjusting VR450.

Set Vertical size at 185mm on 640x480 / 60Hz mode by adjusting VR325.

C Vertical Linearity Adjustment (VR311)

Input Signal: 640x480/60Hz, crosshatch pattern

Adjust **VR311** for same height on the top and bottom blocks.

D Screen And White Balance Adjustment

Input Signal: Cross Hatch Pattern

Adjust **VR352** so that the pincushion distortion is minimum

Drive VRs: VR502, VR532, VR562
Bias VRs: VR910, VR940, VR970

Input Signal: Full White Pattern

1a Set Brightness & Contrast to maximum and G2 voltage to have luminance 1FL.
1b First, adjust VR940 to its center position
Second, adjust VR970 so that Y=0.311
Then, adjust VR910 so that X=0.281
1c Adjust G2 voltage to have luminance to 0.5FL

Input signal: 50mm x 50mm white block pattern

2a Set Brightness at center click position & Contrast to maximum
2b Adjust **VR532** for luminance to 53FL

3a Adjust contrast to 8FL
3b First adjust VR562 so that Y=0.311
Then adjust VR502 so that X=0.281

4a Repeat steps 2b to 3b until the best white balance is obtained

E Focus Adjustment

Input signal: Character "e" pattern

1 Set Brightness & Contrast for a normal display.

2 Adjust the focus control at the high voltage resistor block to obtain the best focus over the entire display area.

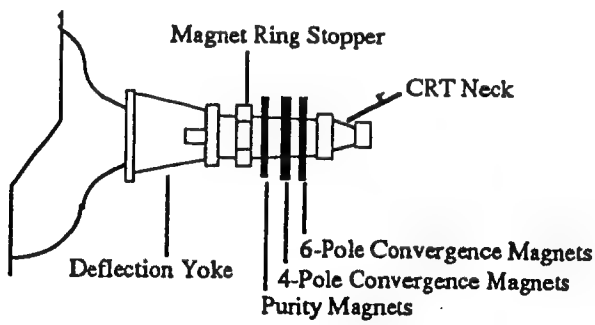
F Static Convergence Adjustment

> **Note** The monitor should be operated for at least 30 minutes before any convergence adjustments are made.

Input Signal: Cross Hatch Pattern

1 Set Brightness & Contrast so that a well-defined pattern is obtained.

2 Ensure that the convergence magnets on the CRT are in the correct position.



3 Turn the 2 tab of the 4-pole magnets independently to adjust their angles. Align the red & blue vertical lines at the center of the screen.

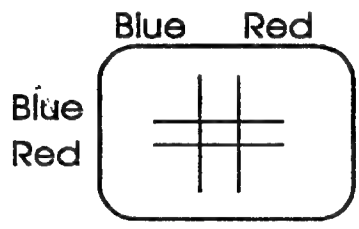
4 Turn the 2 tabs of the 4-pole magnets simultaneously to keep their angles constant. Align the red & blue horizontal lines at the center of the screen.

5 Turn the 2 tabs of the 6-pole magnets independently to superimpose the red or blue vertical line on the green one.

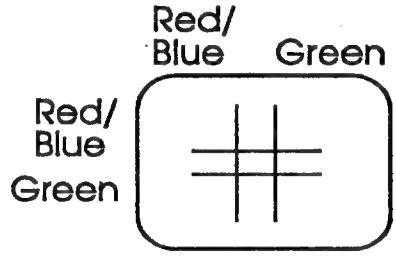
6 Turn the 2 tabs of the 6-pole magnets simultaneously to superimpose the red or blue horizontal line on the green one.

7 Repeat steps 3, 4, 5 & 6 until the best convergence is obtained.

Note	The 4-pole magnets & the 6-pole magnets interact, making dot movements complex.



4-pole magnets movement



6-pole magnets movement

G Degaussing

Degaussing is required when poor color purity appears on the screen. This monitor uses an automatic degaussing circuit that is activated at power on. Automatic degaussing will be fully functional within 15 minutes.

The degaussing effect is confined to the picture tube since the coils are mounted at the back of the tube. Should any part of the chassis or cabinet becoming magnetized, it will be necessary to degauss the affected area with a manual degaussing coil.

Manual Degaussing

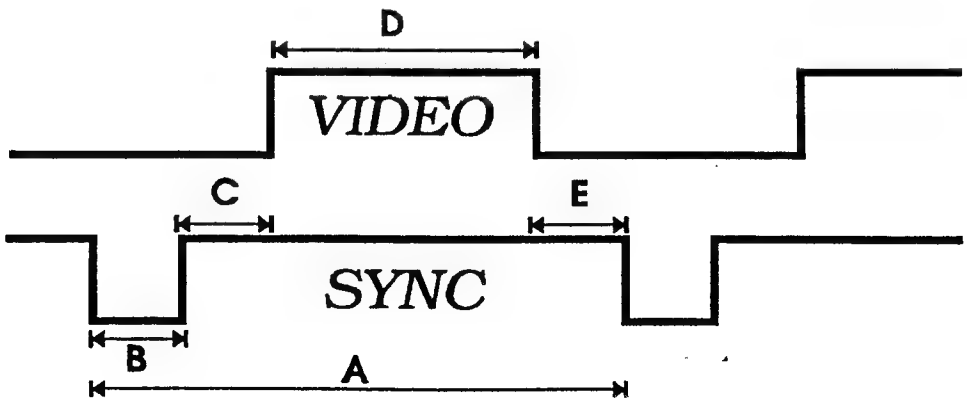
1 Apply line voltage to the degaussing coil and move it in a rotary motion over the front, sides , and top of the monitor. The coil should be kept away from the rear of the monitor to avoid damaging the magnetic neck components.

2 Slowly rotate and move the coil away from the monitor to about 6 feet beyond the point where no effect on the CRT will be noticeable.

For proper degaussing, it is essential that the field be gradually reduced by moving the coil slowly away from the monitor. The degaussing coil must never be shut off or disconnected while near the monitor, as this would introduce a strong field instead of canceling the effect of the stray fields.

TIMING CHART

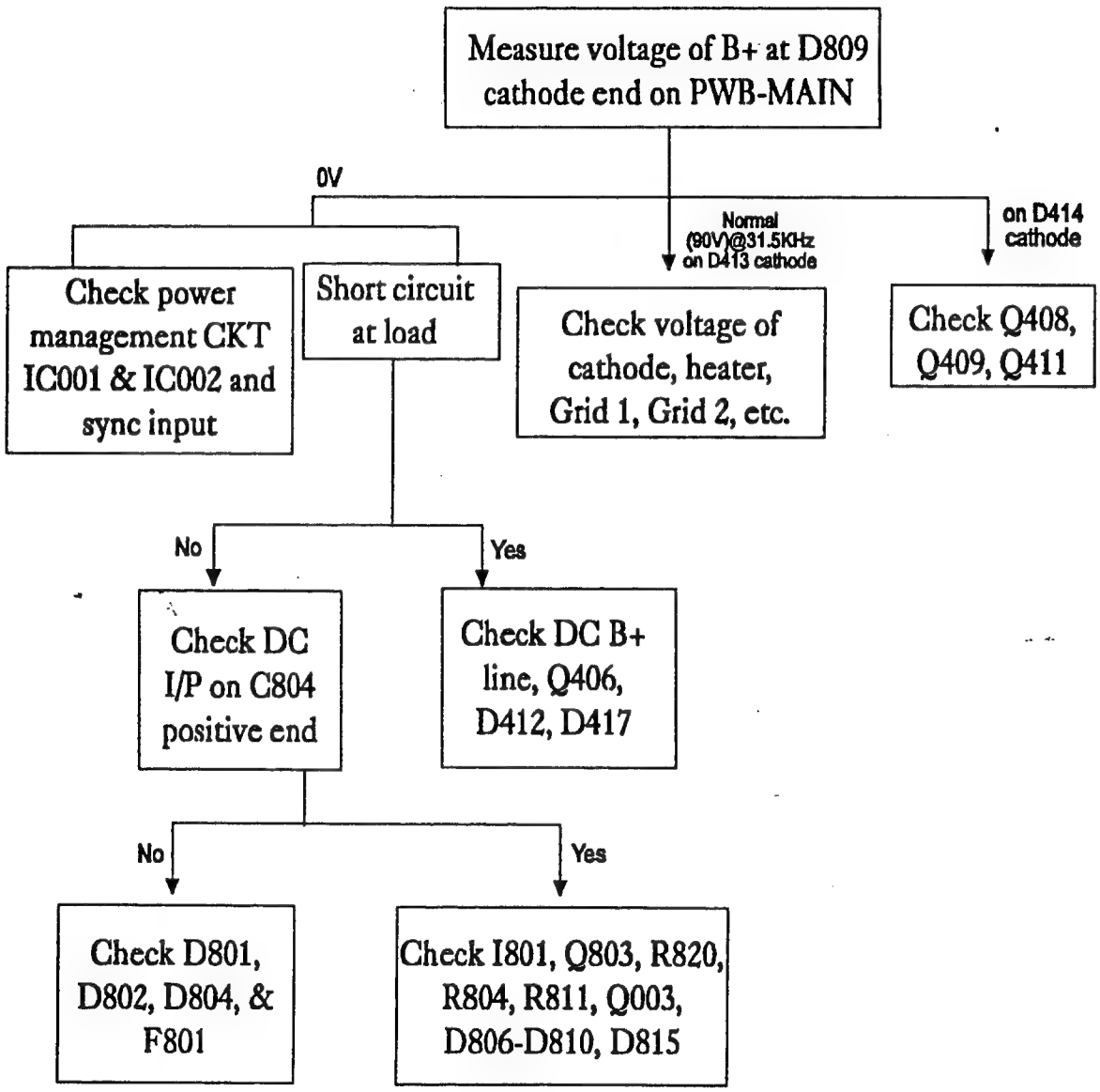
	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5
Hori. Dots	640	720	640	800	1024
Vert. Lines	350	400	480	600	768
Hori. Frequency (KHz)	31.47	31.47	31.47	35.16	35.52
Sync. Polarity	POS	NEG	NEG	POS/ NEG	POS
A us	31.78	31.78	31.78	28.44	28.1
B us	3.81	3.81	3.81	2	3.91
C us	1.907	1.907	1.907	3.556	1.25
D us	25.42	25.42	25.42	22.22	22.81
E us	0.636	0.636	59.95	0.667	0.178
Vert. Frequency (Hz)	70.08	70.08	72.19	56.25	86.96
Sync. Polarity	POS	POS	POS	POS/ NEG	POS
A ms	14.27	14.27	16.68	17.78	11.5
B us	0.064	0.064	0.064	0.057	0.112
C us	1.87	1.08	1.02	0.626	0.577/ 0.653
D ms	11.12	12.71	15.25	17.07	10.82
E ms	1.21	0.413	0.35	0.053	14μ S/0



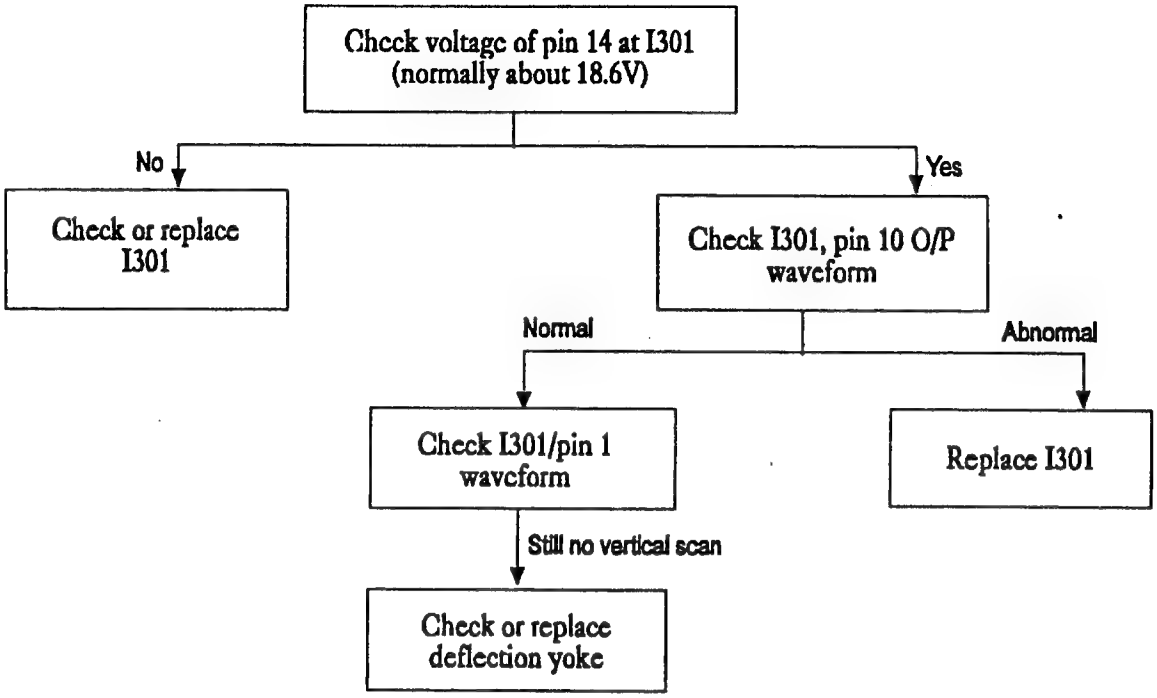
	Mode 6	Mode 7	Mode 8	Mode 9
Hori. Dots	640	800	640	720
Vert. Lines	480	600	350	400
Hori. Frequency (KHz)	37.86	37.88	37.86	37.86
Sync. Polarity	NEG	POS	POS	NEG
A us	26.413	26.4	26.413	26.413
B us	1.27	3.2	1.27	1.27
C us	4.06	2.2	4.063	4.063
D us	20.317	20	20.317	20.317
E us	0.76	1	0.762	0.762
Vert. Frequency (Hz)	72.81	60.32	84.14	84.14
Sync. Polarity	NEG	POS	NEG	POS
A ms	13.735	16.58	11.886	11.886
B us	0.079	0.106	0.079	0.097
C us	0.74	0.607	1.638	1.004
D ms	12.678	15.84	9.244	10.565
E ms	0.238	0.026	0.924	0.238

TROUBLE SHOOTING CHART

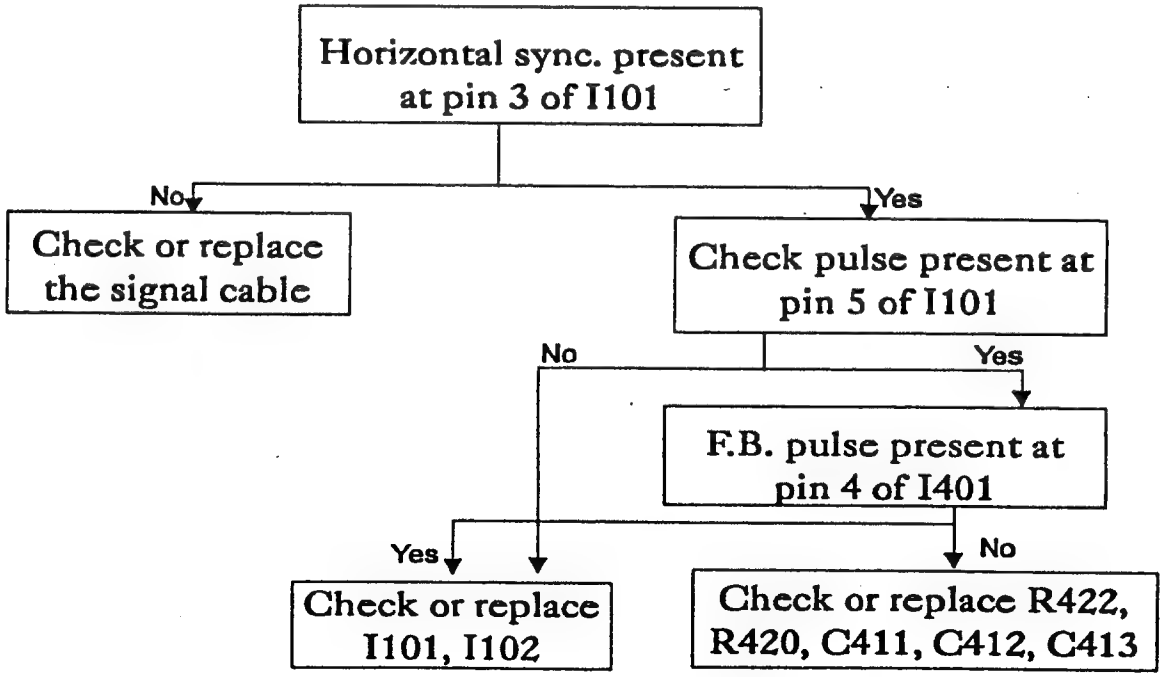
No Raster



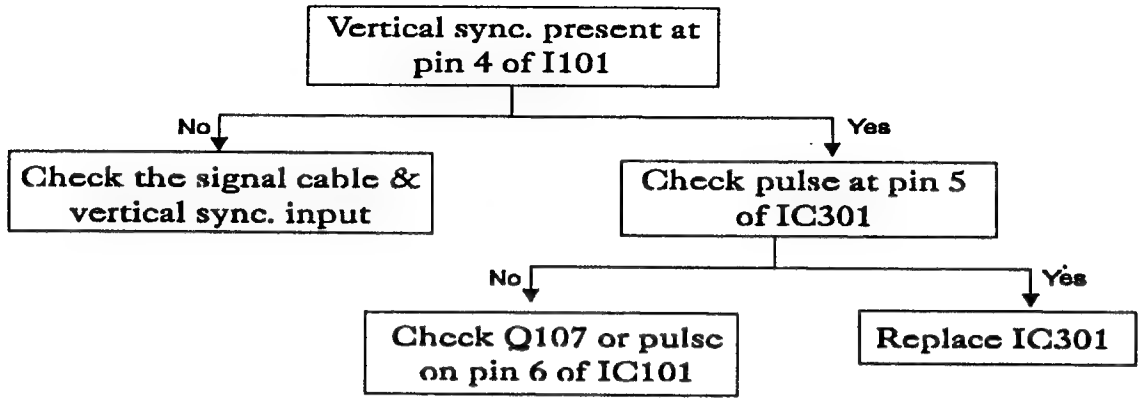
No Vertical Scan (Raster is one horizontal line)



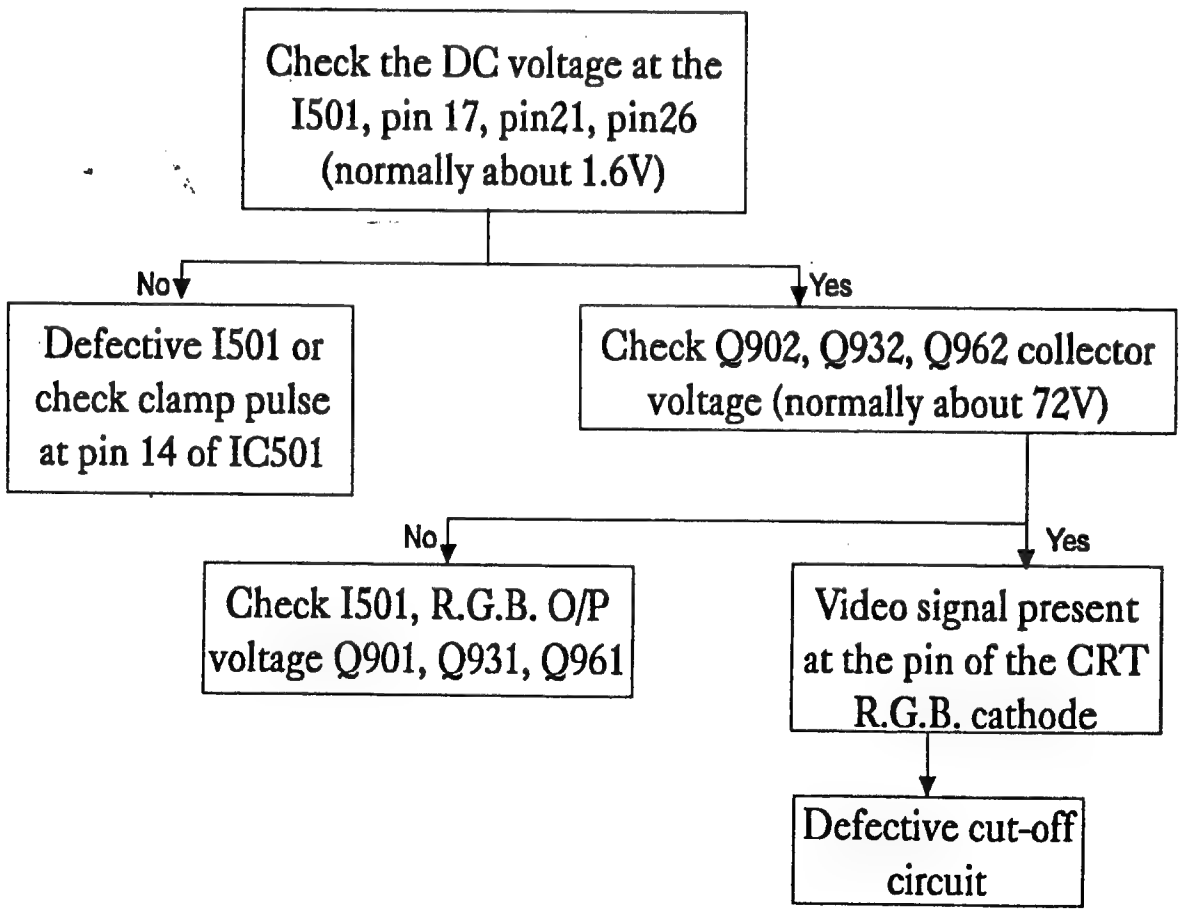
Out of Horizontal Synchronization



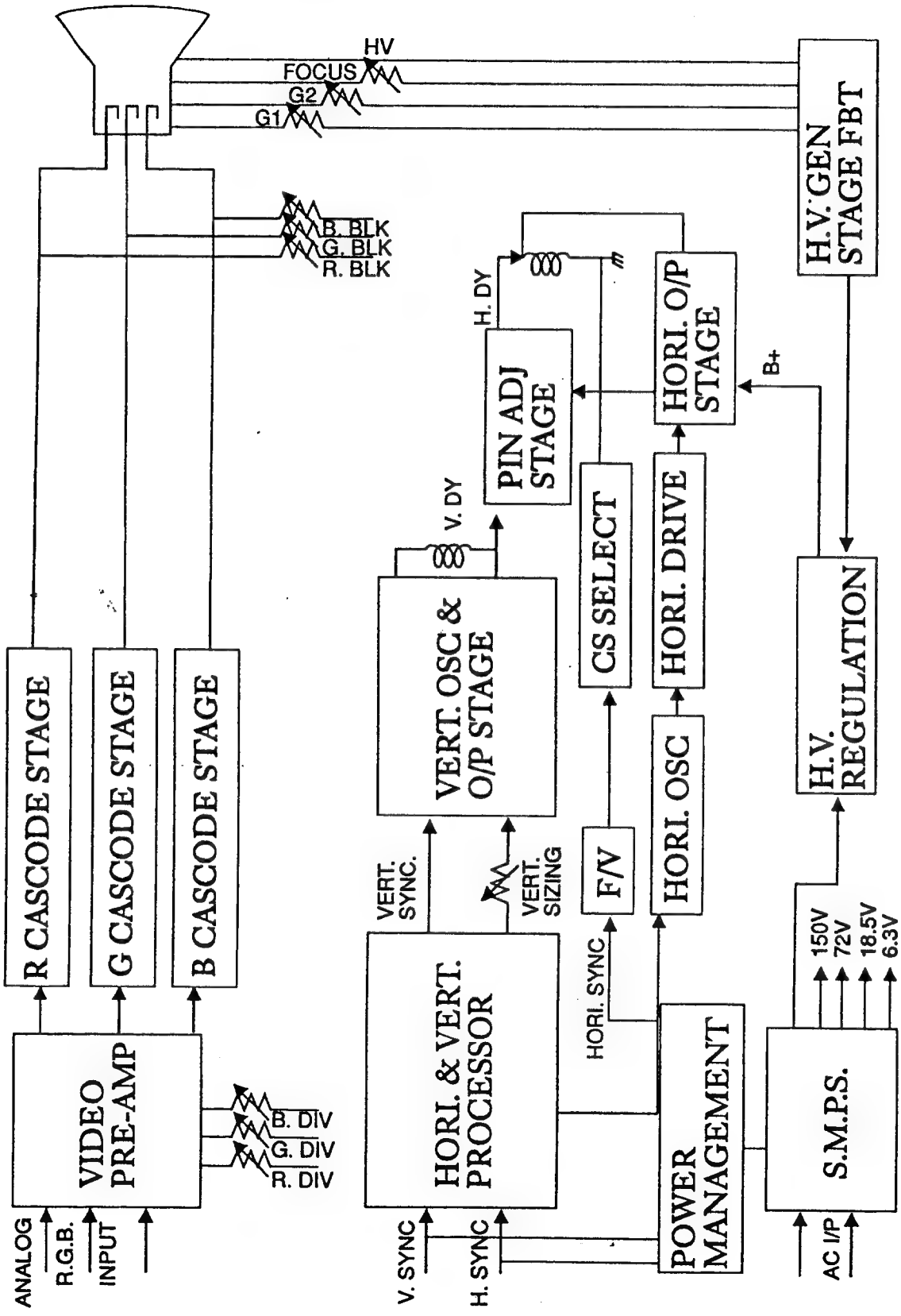
Out of Vertical Synchronization



R. G. B. Video AMP Abnormal

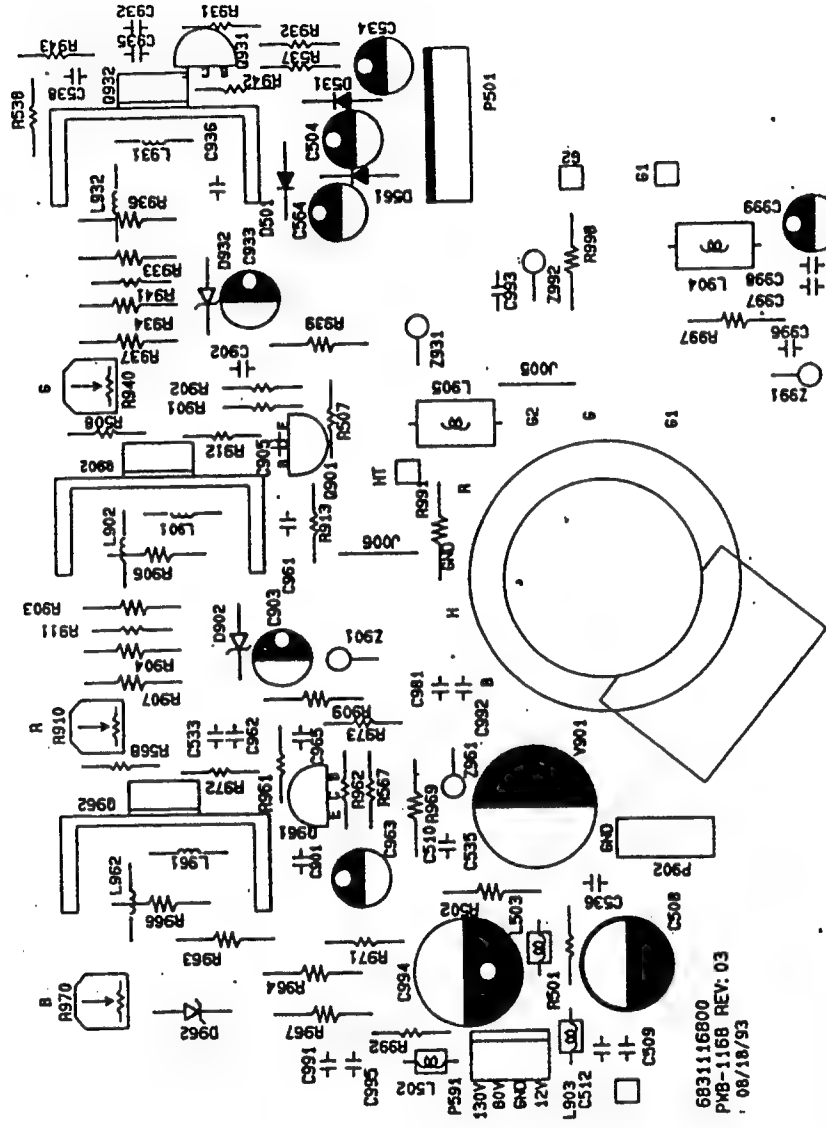


BLOCK DIAGRAM



SPARE PARTS LIST

Location	Part Number	Description
Q406	6421000330	TR NPN 2SC4916 TOSHIBA
Q408, Q409, Q411	6424000600	TR PNP 2SB857C HITACHI
Q413	6426000280	FET N-CHNL IRF630 SGS-THOMAS SAMSUNG
Q803	6426001200	FET N-CHNL IRF730 TO-220F SGS-THOMAS SAMSUNG
D809, D810	6412004117	DIODE UF2004 T52 2A/400V 50nS LITE-ON
D808	6412012107	DIODE UF2005 T52 2A/600V 75nS LITE-ON
D806	6412001904	DIODE UF4007 T26 1A/1KV 75nS LITE-ON
D412, D417	6412004817	DIODE PR3006 T52 3A/800V 500nS LITE-ON
D411	6412002017	DIODE UF3004M T52 3A/400V 50nS LITE-ON
I501	6442000502 6442000500	IC 28P MM1203XD PLASTIC DIP MITSUMI IC 28P LINEAR LM1203 VIDEO NS
I801	6442002500	IC 8P LINEAR SG3842M SGS-THOMAS
I003	6442001201	IC 6P LINEAR 4N35 TELEFUNKEN
I301	6442001400	IC 15P LINEAR TPA1675A SGS-THOMAS
I401	6442000300	IC 8P LINEAR MC1391P MOTOROLLA
I101	6442009200	IC 20P WT8043N20 (ASIC) DIP WELTREND
F801	6851004050	FUSE TIME LAG 4A/250V SEMKO BEL



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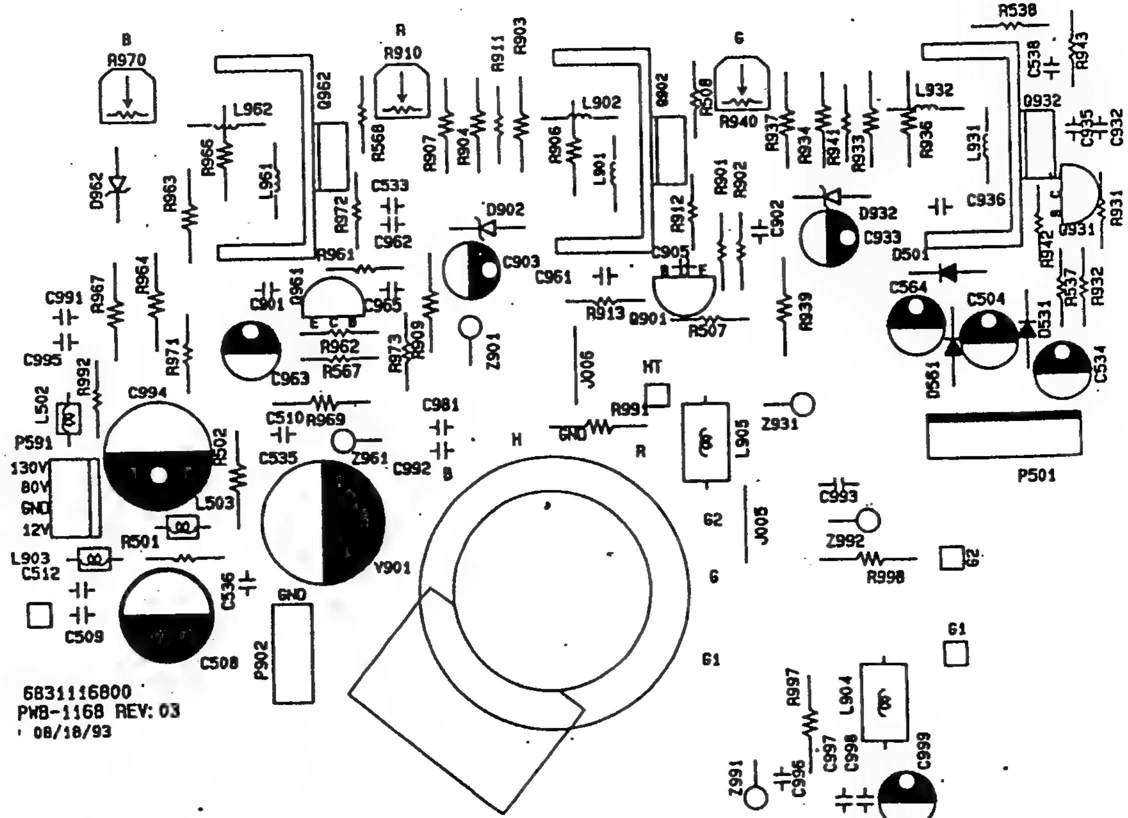
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R973
R909
C963
C991
C995
R967
R964
R971
R992
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P591
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80V
GND
12V
C994
R502
L503
R501
L903
C512
C509
C536
C508
C510
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C535
Z961
C981
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B
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GND
P902
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J006
H
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R906
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08/18/93

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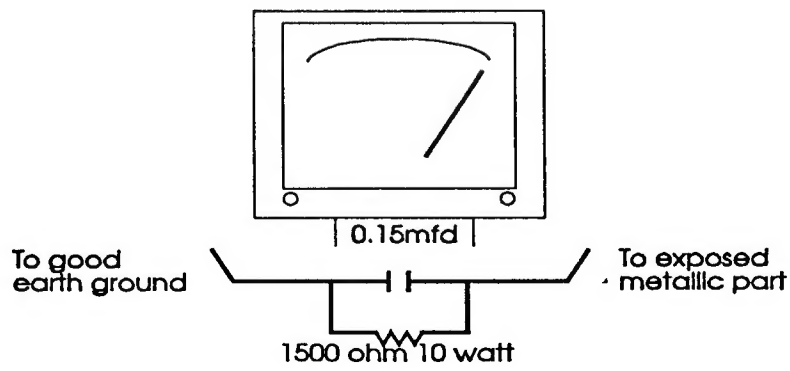

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2 Apply the VGA (31.468KHz) signal to the monitor.

3 Connect a DC meter to **D809** cathode end (on the main PCB), and adjust **VR811** for 18.6+/- 0.1V DC.

4 If a fuse is broken during adjustment, remember to replace it with the exact same type of fuse.

Alignment Procedures

A Synchronization Adjustment

Input signal:

1 Short pin 1 and 2 of **P002** to override the power saving function with a jumper switch.

2 Connect the probe to **D410 anode** and adjust **VR408** to obtain the horizontal frequency to 30.6 KHz +/- 100 Hz.

3 Remove the jumper switch on **P002**, pin 1 and 2.

B Picture Size Adjustment

Input Signal: Cross Hatch Pattern

Set horizontal width at 247mm on 640x480 mode / 60Hz by adjusting VR450.